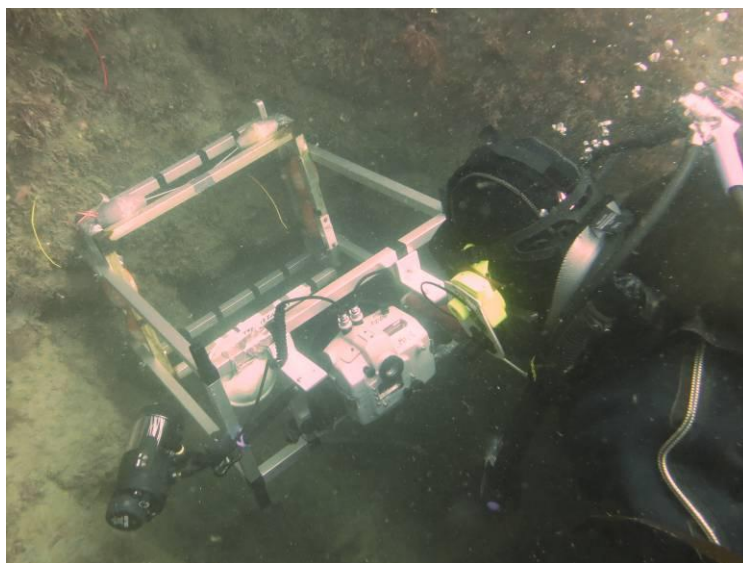




**Cyfoeth  
Naturiol**  
Cymru  
**Natural  
Resources**  
Wales

# Skomer Marine Nature Reserve Annual Report 2013

Phil Newman  
Kate Lock  
Mark Burton  
Jen Jones



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## Synopsis

This is the Skomer Marine Nature Reserve Annual Report to its Advisory Committee. The Advisory Committee is made up of organisations and individuals with an interest in the area covered by the MNR.

The report summarises all aspects of the work of the MNR including a breakdown of staff fieldwork, estate work, recreational use of the reserve, incidents, liaison, wardening, patrol, monitoring and research. Also included are results of some monitoring projects and summaries of published reports.

## Crynodeb

Dyma Adroddiad Blynyddol Gwarchodfa Natur Forol Sgomer (GNFS) i'w Phwyllgor Ymgynghorol. Mae'r Pwyllgor Ymgynghorol yn cynnwys sefydliadau ac unigolion sydd â diddordeb yn yr ardal y mae GNFS yn ymdrin â hi.

Fe fydd yr adroddiad yn crynhoi pob agwedd ar waith GNFS, gan gynnwys dadansoddiad o amser gwaith maes y staff, gwaith stad, y defnydd a wneir o'r warchodfa wrth hamddena, digwyddiadau, gwaith cydgysylltu, wardenio, patrolio, monitro a gwaith ymchwil. Hefyd, mae canlyniadau rhai prosiectau monitro a rhai o grynnodebau adroddiadau sydd wedi eu cyhoeddi, wedi eu cynnwys yma.

## Introduction and Foreword

Welcome to what may well be the last Annual Report from Skomer MNR as the wheels are in motion for commencement of the section of the Marine and Coastal Access Act that converts the MNR to Marine Conservation Zone.

The MNR team were again joined in March by Jen Jones, but because of the absence of spring until some time later than advertised diving fieldwork didn't get under way until late April. We were then able to take advantage of the first summer for several years and get nearly all of our core monitoring projects completed, although sea conditions conspired against any expansion of projects at the High Court Reef site.

The weather did cooperate for our volunteer divers, who successfully carried out the latest territorial fish survey at a number of sites in the MNR, with up to 20 divers on each of two weekends covering 128 transects in total.



Grab sampling featured again in our work for 2013, with sampling in Milford Haven for the Milford Haven waterway Surveillance Group as well as our four-yearly monitoring of the MNR sediment infauna. The new winch certainly proved its worth in the deeper conditions of the MNR, allowing faster sampling and fewer "failed" grabs.

Adjusting to being part of a much larger organisation has taken some getting used to, but we have started to make working links with our new colleagues. Some of our sediment analyses can now be handled by Natural Resources Wales' laboratory facilities in Llanelli and their analytical services manager joined us for the last (and sunniest) day of our grab sampling. Colleagues from NRW Fisheries Assessment Team also came out on Skalmey to test sonar methods for assessing eelgrass populations for NRW's Water Framework Directive work.

We have continued to work with other organisations. With much marine work focussing on the UK's commitments under EU Water Framework and Marine Strategy Framework Directives, Skomer MNR's long-term monitoring data is in demand to help design monitoring programmes. We have continued to contribute to the MarClim intertidal programme and to the work of Swansea University's SEACAMS unit. Workers at the Plymouth Marine Laboratories have used Skomer plankton data to demonstrate how sampling can be made more efficient and collaborative work with overseas institutions continues as before.

Of course the year has also had its challenges! Equipment used in the Polish Oceanographic Institute settlement studies that have been running for 5 years was

badly damaged when lobster potting gear became caught up in it. The settlement frame has now been repaired and redeployed, but not without disruption to the work.

After many years of relatively stress-free operation *Skalmey* has disgraced herself again. Fortunately her turbocharger waited until almost safely back in Neyland marina before self-destructing in spectacular fashion on the way back from our final diving job of the year. My apologies to those using Milford marina lock that night for the involuntary smog bank that descended on them from our direction.



The latest misfortune involved the data buoy moored at our Oceanographic Monitoring Site, which broke free of both its moorings during the ferocious storms in November and was last spotted sailing into St Brides Bay. Despite extensive searches no sign of the buoy has been found to date.

One crisis that ended far more happily was the grounding of the *Lady Helen* in Little Sound on the May bank holiday. Despite a full complement of passengers no one was injured and the rapid response of local boats, in particular the MNR RIB *Morlo*, helped ensure everyone got safely ashore.



MNR staff took part in a number of events during 2013, including Pembrokeshire Biodiversity Partnership gathering and the MNR's own Martin's Haven Marine Day. MNR staff also gave talks to students from Cardiff, Aberystwyth and Reading Universities and hosted a sea-squirt identification course for NRW staff.

## 2 Staff

### 2.1 Staffing

In 2013 the MNR staff were two full-time, Phil Newman (PN) and Mark Burton (MB) and one part-time staff, Kate Lock (KL). Jen Jones (JJ) returned for her third year as seasonal assistant with a contract from mid March to mid September. PN's four month secondment to the Welsh Government Marine Conservation Zone Task and Finish Team ended in April.



Local CCW marine colleagues Anne Bunker and Lily Pauls also supported MNR staff when their time allowed.

Volunteers contributed greatly again to the output of the MNR, whether as part of the volunteer fish surveying teams, as part of the MNR diving team or making other contributions to fieldwork above and below water and to weekend patrols:

- Rob Gibbs, John Archer Thomson, and Blaise Bullimore for diving support.
- Honorary Wardens (see Section 2.2), who help keep records of visitors, disturbance incidents, infringements of MNR Codes of Conduct and records of species sightings. Also helping to keep the MNR exhibition open for as many days per week as possible.
- Amilia Buchan and Jenny Allen who helped with non-diving work.
- The teams of volunteer divers involved in the territorial fish monitoring surveys.

### 2.2 Honorary and Voluntary Wardens

The following served as Honorary Wardens (HW):

The whole Bullimore family

Sue Burton

Dr Robin Crump

Brian Dilly, dive charter operator

Kenny Gainfort, Skipper *Dale Princess*

Carl Wonnacot, crew *Dale Princess*

Barry Davies and Lionel Jewell, Martin's Haven National Trust car park attendants

Jane Hodges, PCNPA

Ivor Johnson, Old Mill Diving Services

Bruce Jones, BSAC

James Perrins.

## 2.3 Training

In March 2013 KL, MB and JJ, along with other NRW staff, attended the three-day country agency dive safety training held in Plymouth.

PN renewed his First Aid training in February 2014

In January 2013 PN, KL and MB completed the RYA Professional Practices and Responsibilities course and in February completed the shore based RYA Yachtmaster course. They plan to complete the practical element of the course and exam in April 2014.

PN and KL attended a workshop on seal photo-identification run by the Sea Mammal research Unit.

All MNR and some NRW marine staff took part in an identification course on sea squirts (Ascidians) run by Dr Bernard Picton and Professor David Kipling.

KL and MB attended NRW Environmental Waste Awareness training in January 2014.



PN, KL and MB attended a marine incident response training event and PN attended a workshop on “Tools to assess the socio-economic benefits of MPAs” in March 2014.

## 2.4 Health and Safety

The MNR safety documents continue to be updated: COSHH assessments and PPE assessments are added as necessary and PUWER assessments are prepared for new and existing projects.

Dive Project Plans and risk assessments, required under HSE Agreed Code of Practice (ACoP) for Scientific and Archaeological Diving Projects, continue to be prepared for each diving project.

One accident was reported in 2013 when MB suffered a sprained ankle while working in the barn.

The grounding of the *Lady Helen* in Little Sound on the May bank holiday has been mentioned in the introduction. Special mention should be made of Jen’s role in the happy outcome to this incident as well as Bruce Jones, who was acting as volunteer that day. Their experience and boat handling skills ensured many of the passengers were transferred to other larger



vessels unable to manoeuvre close enough to the grounded vessel.



MB and KL also responded to a suspected stroke aboard a local charter vessel, taking emergency oxygen and a defibrillator unit out to the vessel.



MNR staff assisted a yacht that had run aground on Rye Rocks in June. The yacht was apparently undamaged and, after being towed off by *Skalmey*, able to continue on its journey.

Not involving MNR staff, but relevant to the MNR was an incident recorded by Skomer Island staff when a yacht dragged its anchor and became stranded on rocks in South Haven. Angle Lifeboat attended and the vessel was refloated without any injuries, or pollution.



## 3 Estate

### 3.1 Buildings

*Project: ME12/01*

CCTV coverage at the MNR's Fisherman's Cottage office has been extended to cover the exhibition room. This should improve security in the exhibition, but may also allow analysis of visitor reaction to the various elements of the exhibition. An updated logging system (the current one dates from the mid 1990s) to count visitors has been ordered and will be installed in 2014.

The maintenance of Fisherman's Cottage is now carried out by a NRW contractor, this includes all building maintenance, routine monitoring and cleaning. The building is currently being cleaned on a weekly basis.

All MNR waste handling and energy consumption continues to be monitored and audited in line with ISO 14001 and Green Dragon level 5 environmental management standards.



### 3.2 Boats

*Project: MM00/01*

#### 3.2.1 Boats

*Skalmey* spent 65 days at sea in 2013 and logged 213 engine hours

As well as routine diving duties *Skalmey* was used to carry out sediment infauna monitoring within Skomer MNR and in Milford Haven on behalf of Milford Haven Waterway Surveillance Group. At both sites the new winch fitted to *Skalmey* made sampling a good deal easier and safer than our old capstan style winch.

*Skalmey*'s engine was removed and repainted early in 2013, but promptly broke its turbocharger, so the engine's beautiful new paintwork soon resumed its rather grubby previous appearance. There were also problems with the exhaust system, which in turn led to more issues with the turbocharger as described in the introduction. Remedial work is underway.

MNR staff also experimented with beaching *Skalmey* at Martins Haven to replace part of the water jet drive. This meant a saving in fuel consumption compared with the alternative of motoring to Neyland to be craned out.





Lifting equipment aboard Skalmey was tested (in the rain) during 2013.

The MNR RIB *Morlo* spent 30 days at sea in 2013 and logged 89 engine hours. *Morlo* is used mainly for patrol work, seal monitoring, for accessing intertidal monitoring sites around the MNR and very occasionally (we hope) as towing vessel for *Skalmey*.



### 3.2.2 Seatime

Staff and vessel seatime are shown in Table 3.1.

**Table 3.1 Summary of Staff Boat and Seatime**

	1995	1996	1997*	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
<b>Days at sea</b>																			
Skalmey	68	90	19	9	23	42	48	73	77	52	48	58	72	58	61	69	99	95	65
SkalmeyII/Morlo	76	52	99	71	39	38	31	37	32	40	43	40	38	36	38	48	36	35	30
<b>Total</b>	<b>144</b>	<b>142</b>	<b>118</b>	<b>80</b>	<b>62</b>	<b>80</b>	<b>79</b>	<b>110</b>	<b>109</b>	<b>92</b>	<b>91</b>	<b>98</b>	<b>110</b>	<b>94</b>	<b>99</b>	<b>117</b>	<b>135</b>	<b>130</b>	<b>95</b>
<b>MNR Staff seatime (hrs)</b>																			
Skalmey	614.8	919	181.55	70	195	492.5	622	883	777	640	618	621	933	685	747	718	942	743	684
SkalmeyII/Morlo	645	352	733	514	219	254	226	277.4	279	461	405	331	339	278	278	295	313	234	188
<b>Total</b>	<b>1259</b>	<b>1271</b>	<b>914</b>	<b>584</b>	<b>414</b>	<b>746</b>	<b>847</b>	<b>1160</b>	<b>1056</b>	<b>1101</b>	<b>1023</b>	<b>952</b>	<b>1272</b>	<b>962</b>	<b>1025</b>	<b>1013</b>	<b>1255</b>	<b>977</b>	<b>872</b>
<b>MNR Staff days at sea</b>																			
Skalmey	156	223	51	14	42	96	129	225	205	154	158	165	202	170	189	183	279	253	178
SkalmeyII/Morlo	168	104	214	149	62	60	58	80	70	104	99	86	84	73	73	93	76	75	65
<b>Total</b>	<b>324</b>	<b>327</b>	<b>265</b>	<b>163</b>	<b>104</b>	<b>156</b>	<b>187</b>	<b>305</b>	<b>275</b>	<b>254</b>	<b>257</b>	<b>251</b>	<b>286</b>	<b>243</b>	<b>262</b>	<b>276</b>	<b>355</b>	<b>328</b>	<b>243</b>
<b>Other Staff seatime (hours)</b>																			
Skalmey	n/a	n/a	n/a	n/a	n/a	274	197	204	88	76.7	75.25	233	257	107	225	390.4	220	279	140
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	106	89	89.7	69	107	88	142.5	77	113	77.5	157	51	50	39
<b>Total</b>						<b>379</b>	<b>286</b>	<b>293</b>	<b>157</b>	<b>184</b>	<b>163</b>	<b>376</b>	<b>334</b>	<b>220</b>	<b>303</b>	<b>547</b>	<b>271</b>	<b>329</b>	<b>179</b>
<b>Other Staff days at sea</b>																			
Skalmey	n/a	n/a	n/a	n/a	n/a	40	36	23	21	15	18	30	26	26	57	94	48	83	35
SkalmeyII/Morlo	n/a	n/a	n/a	n/a	n/a	17	19	22	15	21	17	22	12	29	18	35	11	14	9
<b>Total</b>						<b>57</b>	<b>55</b>	<b>45</b>	<b>36</b>	<b>36</b>	<b>35</b>	<b>52</b>	<b>38</b>	<b>55</b>	<b>75</b>	<b>129</b>	<b>59</b>	<b>97</b>	<b>44</b>
<b>Total Staff seatime (hrs)</b>																			
Skalmey	n/a	n/a	n/a	n/a	n/a	766	819	1087	865	717	693	854	1190	791	973	1109	1162	1022	824

Skalmeyll/Morlo	n/a	n/a	n/a	n/a	n/a	360	315	367	348	568	493	473	416	392	355	452	313	284	227
<b>Total</b>						<b>1126</b>	<b>1134</b>	<b>1454</b>	<b>1213</b>	<b>1285</b>	<b>1186</b>	<b>1328</b>	<b>1606</b>	<b>1183</b>	<b>1328</b>	<b>1561</b>	<b>1475</b>	<b>1634</b>	<b>1051</b>
<b>Total Staff days at sea</b>																			
Skalmey	n/a	n/a	n/a	n/a	n/a	213	242	248	226	169	176	195	228	196	246	277	327	336	213
Morlo	n/a	n/a	n/a	n/a	n/a	77	77	102	85	125	116	108	96	102	91	128	87	89	74
<b>Total</b>						<b>213</b>	<b>319</b>	<b>329</b>	<b>311</b>	<b>294</b>	<b>292</b>	<b>303</b>	<b>324</b>	<b>298</b>	<b>337</b>	<b>405</b>	<b>414</b>	<b>425</b>	<b>287</b>
<b>Engine hours</b>																			
Skalmey	170	210	43.9	27.5	83.47	188.03	181.1	245.3	284.54	171.07	150.16	169	244.38	168.62	224	241	322	266	222
Skalmeyll/Morlo	187.5	95.75	212.5	161.25	100.5	142	99	118	96	162.7	160	141.25	120.5	144.67	139	157	118	110	139
<b>Total</b>	<b>357.5</b>	<b>305.75</b>	<b>256.4</b>	<b>188.75</b>	<b>184</b>	<b>330</b>	<b>280.1</b>	<b>363.3</b>	<b>380.54</b>	<b>333.8</b>	<b>310.2</b>	<b>310.25</b>	<b>364.9</b>	<b>313.3</b>	<b>363</b>	<b>398</b>	<b>440</b>	<b>376</b>	<b>361</b>

\*1997 includes Jan - March 98 - all subsequent years are for April to March

MNR Staff = Philip Newman, Kate Lock, Mark Burton, Jen Jones

Other Staff = CCW Staff and Volunteers

Staff days at sea = total days on which each member of staff went out in a boat.

Staff seetime = total of each member of staff's seetime.

Boat days at sea = number of times the boat left its moorings.

### 3.3 Equipment

*Project: A110/01*

The Skomer MNR inventory has been kept updated, with any new purchases or disposal of equipment recorded. The inventory is checked annually by NRW Regional administrative staff.

#### 3.3.1 Safety, diving and protective equipment

*Project: MM20/01*

*Skalmey's* liferaft has had its annual inspection and a Solas-approved life raft continues to be hired for *Morlo*.

Lif jackets were inspected and inflation tested. Other personal protective equipment was maintained or purchased as required.

*Project: MM20/02*

Diving regulators were all serviced and cylinders tested as per HSE requirements.

Other Skomer MNR diving equipment was maintained by MNR staff or by contractor.

MNR diving equipment has been repaired or replaced as necessary and additional higher capacity pony cylinders acquired for occasional dives to greater than routine depths are planned.

#### 3.3.2 Optical, photographic and scientific

*Project: MM20/03*



All cameras and flashguns were serviced and repaired by contractor during the winter season.

A trinocular low power microscope has been acquired to be used for the planned 2014 nudibranch survey. This will give the MNR the facility for photographing specimens as part of the recording process and where extra identification advice may be needed.

*Project: MM20/04*

Skomer MNR scientific instruments were serviced and calibrated as necessary.

As mentioned in the introduction the OMS data buoy broke free of its double mooring in November and was reported adrift by the crew of one of the tankers anchored in St Brides Bay. As soon as the weather allowed MB and KL used *Morlo* to search the coast of the bay, but no



sign of the buoy was found. Although a yellow buoy was washed up at Weston-super-Mare it turned out not to be ours.

### 3.3.3 Vehicles

*Project: MM00/03*

The MNR Ford Ranger now proudly bears its NRW logo. All MNR trailers, including bowser and boat trailers have been serviced annually.

### 3.4 Estate Work

*Project: ME01/01*

The “no-anchoring” marker buoys to protect the North Haven eelgrass bed were deployed again in 2013. MNR staff assisted the Trinity House inspector with boat access for his annual inspection.

*Project: ME02/01*

Skomer MNR moorings in Martins Haven and at Dale continue to be maintained.

*Project: ME02/02*

The MNR visitor moorings in North Haven are as popular with visiting vessels as ever and were again deployed from Easter through to mid October. During the winter the buoys were replaced with pellet buoys marked ‘no mooring’ to discourage winter visitors from using un-maintained moorings.

*Project: ME04/01*

NRW has retained CCW’s environmental management scheme so Skomer MNR staff continue to manage waste in accordance with the standards described in Section 3.1.



Most beach rubbish continues to be dealt with by the local village warden, who also maintains the toilets at Martin’s Haven. Occasional litter encountered at sea, including fishing rope, nets and large pieces of wood were recovered if considered to be a hazard to navigation or wildlife.

Neptune’s Army of Rubbish Collectors (NARC), who carried out seabed litter clearances at a number of sites around the MNR have again completed some along the north Marloes peninsula.

The Keep Wales Tidy ‘Angle bin’ at the Deer Park entrance, which is used to encourage anglers to deposit their angling rubbish, has now been joined by one of the new MCS “big” bins at the end of the coast path next to Martins Haven beach.



The NARC and Pembrokeshire Federation of Angling Coaches (PFAC) 'Angling tips for Martins Haven' leaflets detailing how to minimise tackle loss continue to be distributed via leaflet dispensers positioned at the Deer Park entrance and on the coast path signpost at the bottom of the Martins Haven lane.

Both angle bins and leaflet dispensers are maintained by MNR staff.

### 3.5 Diving Operations

Details of diving operations are shown in Table 3.2 and Figures 3.1 and 3.2.

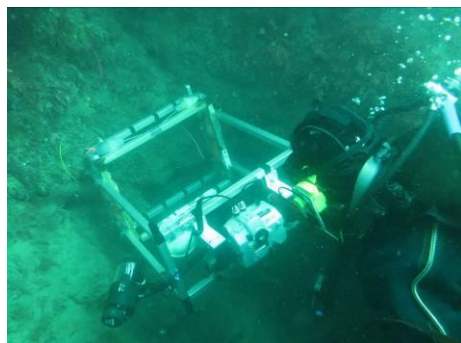


Figure 3.1 shows the number of dives since 1992 completed by both MNR staff only and the total (MNR staff and contract/volunteer divers). There has been an average of 191 dives per year for MNR staff and totals average of 230 dives per year. The 2013 dive numbers were 223 only 7 dives below the annual average. All routine annual diving projects were completed, but dives planned to map and expand monitoring sites on the south side of Skomer were again impossible due to weather and

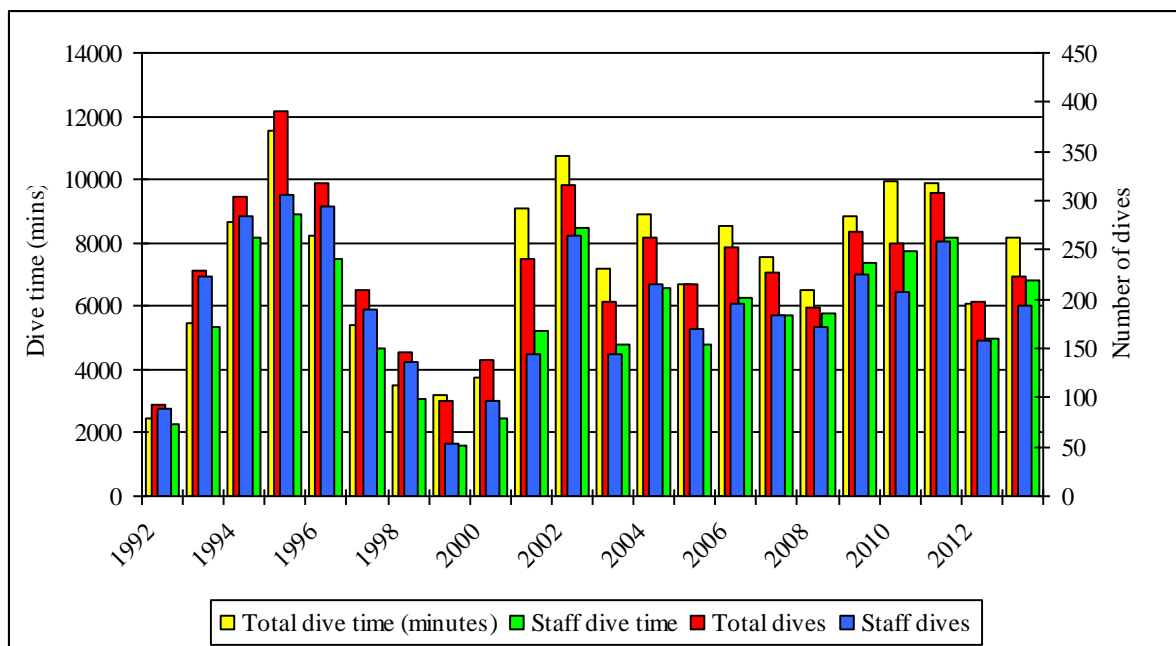
visibility conditions experienced at those sites. (Please note that these figures do not include the dives carried out by the volunteer on the territorial fish survey.)

**TABLE 3.2 Summary of Diving Activity 2013**

	MNR STAFF	CONTRACT & VOL DIVERS	TOTAL
Dives	193	30	223
Dive time (min)	6835	1362	8197
Dive time (hrs)	113.92	22.70	136.62
Average dive time (mins)	35	45	36.76
Diving days			38

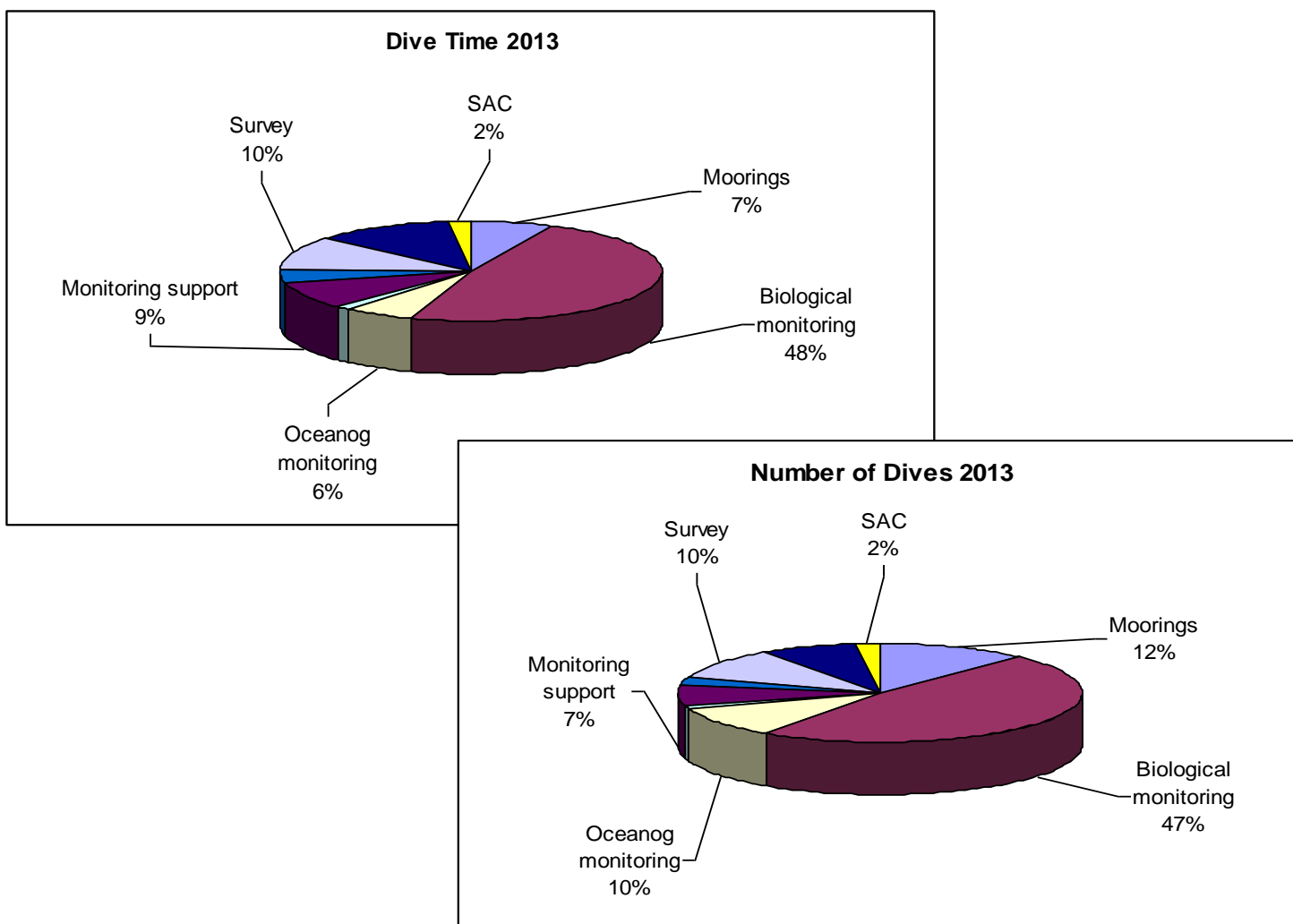
**Figure 3.1 Summary of MNR Diving Activity 1992-2013**

(Including contract and volunteer divers where they are part of the MNR diving team)



**Figure 3.2 MNR Diving Operations 2013**

(Including contract and volunteer divers where they are part of the MNR diving team)





## 4 Management

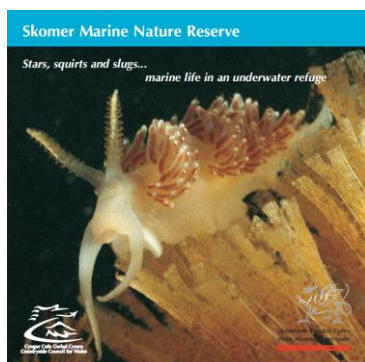
### 4.1 Wardening and Patrol

*Project: MP00/01*

Dedicated site patrol was carried out at Skomer MNR on 14 Sundays and Bank Holiday weekends between May and September. A watching brief was also maintained at times when staff were carrying out other work on the water, although a full patrol was not possible on days when the team were supervising volunteer diving surveys.

For sea time statistics see table 3.1. Data for all observed visitors and use of the MNR from April 2013 to end of March 2014 is shown in Section 5.

### 4.2 Information



Stocks of the MNR interpretative booklet “Stars, squirts and slugs...marine life in an underwater refuge”, which was considered an essential component of the interpretative function of the MNR display at Martin’s Haven, were exhausted by the end of the 2012 season and so not available in 2013. The booklet provides written information to support the display’s images and video footage (see section 8.2), but currently there is a moratorium on the production of any literature.

Similarly, visitors to the display are no longer able to obtain free copies of the MNR computer-generated seascape poster created by Mike Camplin.

Fortunately our stock of MNR “User Regulations” leaflets is sufficient to continue to be distributed and is now supported by Pembrokeshire Marine Code maps with relevant information for boat users. The “Diver Safety” leaflet is printed out or supplied electronically on request.

The booklet and leaflets will be available electronically on the NRW website when it is fully functioning.

## 4.3 Management Issues

### 4.3.1 Dredging/beam trawling

No beam trawling or dredging was observed in 2012

### 4.3.2 Potting *Project: RH03/05 Watching brief*

Vessels operating in the MNR in 2013/14 are listed in Section 5.1 and for fishing effort estimates see Appendix 1.

MNR staff continued to record incidents of potting gear proximity to fragile species in 2013. MNR staff endeavour to recover lost pots if possible, but otherwise they are left in place but opened to prevent “ghost” fishing.

The seafan “casualty” from last year that MNR staff artificially reattached to the rock outcrop at our Pool monitoring site appears to be responding well to treatment with much of the colony’s polyps extended and feeding at the time this monitoring photo was taken.



### 4.3.3 Tangle and gill netting *Project: RH03/06 Watching brief*

None observed in 2013

### 4.3.4 Collection of shellfish by divers *Project: RH36/01 Watching brief*

No collection of shellfish was recorded in 2013

### 4.3.5 Collection of curios *Project: RH36/01 Watching brief*

None observed in 2013.

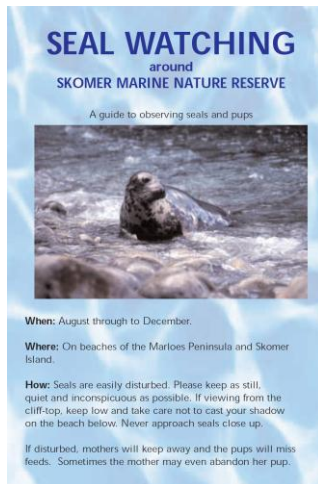
### 4.3.6 Collection of specimens for education and research

In 2013 collections of specimens were carried out by MNR staff of Eelgrass *Zostera marina* in May and of sponge species samples in October to support research in specific projects described in Section 7.3. Sample collection was kept to a minimal feasible size and quantity.

### 4.3.7 Disturbance to seals

Project: RH03/04 Watching brief

Permits were issued to the Wildlife Trust South and West Wales seal workers under contract to NRW on Skomer to enable them to approach and dye-mark seal pups.



The MNR 'Seal Watching leaflet', containing information on seals and how to minimise disturbance whilst watching them, was distributed from the MNR exhibition by WTSWW staff at Lockley Lodge and by the NT car park attendants.

The only record of disturbance to seals was reported by a member of public who had observed someone "prodding" a seal pup at Martins Haven. Information signs were put up at the access point to Martins Haven, but the open access makes it impossible to restrict the public from going onto the beach. Although several pups were born at Martins Haven in 2013, making it a popular site to visit, overall disturbance was minimal and cows continued to feed their pups.

Monofilament line and netting continue to be the main obvious pollution affecting seals. In 2013 12 seals were seen around the island showing obvious signs of being entangled in nets at some time in their lives, most commonly a deep scar around their necks, often with netting still embedded. All 12 seals were previously unknown from the photo catalogues, therefore these are all new cases and additional to the 25 entangled seals identified in 2012.

Some of the seals appear to cope well despite their injuries, even successfully raising pups, but the potential for further injury, infection to existing wounds or getting trapped must be high.

### 4.3.8 Disturbance to cliff nesting seabirds Project: RH03/03 Watching brief

Two incidents were recorded in 2013 involving recreational vessels. In May the MNR patrol boat was alerted by Skomer Island staff that a vessel was in the Wick. The MNR user regulation leaflet was gratefully received as the people aboard the vessel were unaware of the restrictions. Island staff also recorded another vessel in the Wick in July.

Skomer Island staff witnessed a fishing vessel operating in the Wick during July contrary to the voluntary exclusion area, which has been previously well adhered to by commercial fishing vessels. The vessel's potting activities frightened several hundred birds off the nesting ledges.



Photo: Lewis Jates

#### **4.3.9 Spear fishing**

*Project: RH36/01 Watching brief*

Two incidents of spear fishing were observed in 2013. In June a National Coastwatch Institution volunteer reported 2 spear fishermen at Martins Haven and in September MNR staff spotted 2 spear fishermen who were informed about the codes of conduct and agreed to stop their activity.

#### **4.3.10 Angling**

*Project: RH03/08 Watching brief*

See Section 5 for numbers of anglers observed.

Neptune's Army of Rubbish Collectors have kept up their efforts at the MNR as well as at other sites around Pembrokeshire clearing discarded or tangled fishing line from the seabed. However, this form of litter continues to be a problem in the MNR, particularly at sites adjacent to popular shore angling ledges.

Efforts are continuing to encourage anglers to dispose of their discarded line responsibly via "angle bins" situated at Martins Haven (see Section 3.4).

#### **4.3.11 Mooring and Anchoring**

*Project: RH36/01 Watching brief*

No observations were made of boats anchoring in the North Haven eelgrass bed in 2013.

The day visitor moorings at North Haven continue to be maintained and are very popular with visiting boats.

#### **4.3.12 General Boating**

*Project: RH03/02 Watching brief*

The RIB *Skomer Explorer* was observed leaving NHV at speed on one occasion, the crew was spoken too and reminded of the speed limits.

#### **4.3.13 Wrecks**

The *Lucy* wreck continues to be a very popular dive site, the top buoy marking the wreck was maintained.

#### **4.3.14 Oil**

*Project: RH07/01 Watching brief*

No reports of oil pollution were received by MNR staff in 2013.

#### 4.3.15 Water Quality *Project: RP63/03*

Bathing water quality data for Martins Haven continues to be obtained from Pembrokeshire County Council. See table below for 2013 results.

Week	Sampling Date	Sampling Time	Qualifier	Intestinal Enterococci (Confirmed) Cfu/100ml	Qualifier	E Coli (Confirmed) Cfu/100ml
1	08/05/2013	10:29	<	10	<	10
2	13/05/2013	10:15	<	10	<	10
3	20/05/2013	10:00	<	10	<	10
4	28/05/2013	10:30	<	10	<	10
5	04/06/2013	10:38	<	10	<	10
6	10/06/2013	10:15	<	10	<	10
7	17/06/2013	10:39	<	10	<	10
8	24/06/2013	10:00	<	10	<	10
9	01/07/2013	10:26	<	10	<	10
10	08/07/2013	11:00	<	10	<	10
11	15/07/2013	10:32	<	10	<	10
12	22/07/2013	10:00	<	10	<	10
13	29/07/2013	10:27	<	10	<	10
14	05/08/2013	11:30	<	10	<	10
15	12/08/2013	10:25	<	10	<	10
16	19/08/2013	09:40	<	10	<	10
17	27/08/2013	10:27		18	<	10
18	02/09/2013	10:00	<	10	<	10
19	09/09/2013	10:33	<	10	<	10
20	16/09/2013	10:00	<	10	<	10

## 5 Visitors and Use of the MNR

### 5.1 Commercial Use

*Project: RH90/01*

Commercial fishing activity in Skomer MNR was recorded as in previous years by recording observations of fishing vessels operating in the MNR and by mapping of pot marker buoy distribution during on-water patrols.

21 pot maps were produced in 2013 using GPS and these have been transferred to the GIS mapping system MapInfo. The summary maps for 2013 can be seen in Appendix 1 together with a graph summarising fishing effort since 1989.



Photo: Eddie Stubbings

Fishing boats operating in the MNR during 2013 were recorded (either seen directly or from presence of marked gear) as Crowded Hour (M1140), Lydon (M1050), M59, KTJ (SU02/M38), Millie G (M77), Storm Child (M83), BD4, M1130, M4 and M1094.

From the pot mapping it was apparent that some vessels were leaving gear in the MNR without moving it for prolonged periods of time and in some cases many months. One such string of pots was investigated and found to be actively “ghost fishing” with many live shellfish trapped in heavily fouled pots and the remains of many others in and around the pots. Attempts to contact the owners of pots (where known) went unanswered. WG Fisheries staff have been informed and further cases will be reported to them in 2014.

Potting activity appears to have levelled off in terms of area covered, but although the number of pots (effort) has decreased from the 2012 peak, the average potting effort in 2013 is still over 4 times higher than recorded in 2001.

### 5.2 Recreational Use

*Project: RH33/01*

Types and numbers of visitors recorded for 2013 are summarised in Table 5.1 and Figures 5.1 to 5.4.

Recreational visitor numbers remained generally low in 2013, despite better weather during the summer season, although the number of people visiting on recreational boats has recovered somewhat. Diver numbers remain low, which could reflect lower take up of the sport in UK waters, loss of local facilities and increased cost of fuel and parking fees at Martin’s Haven

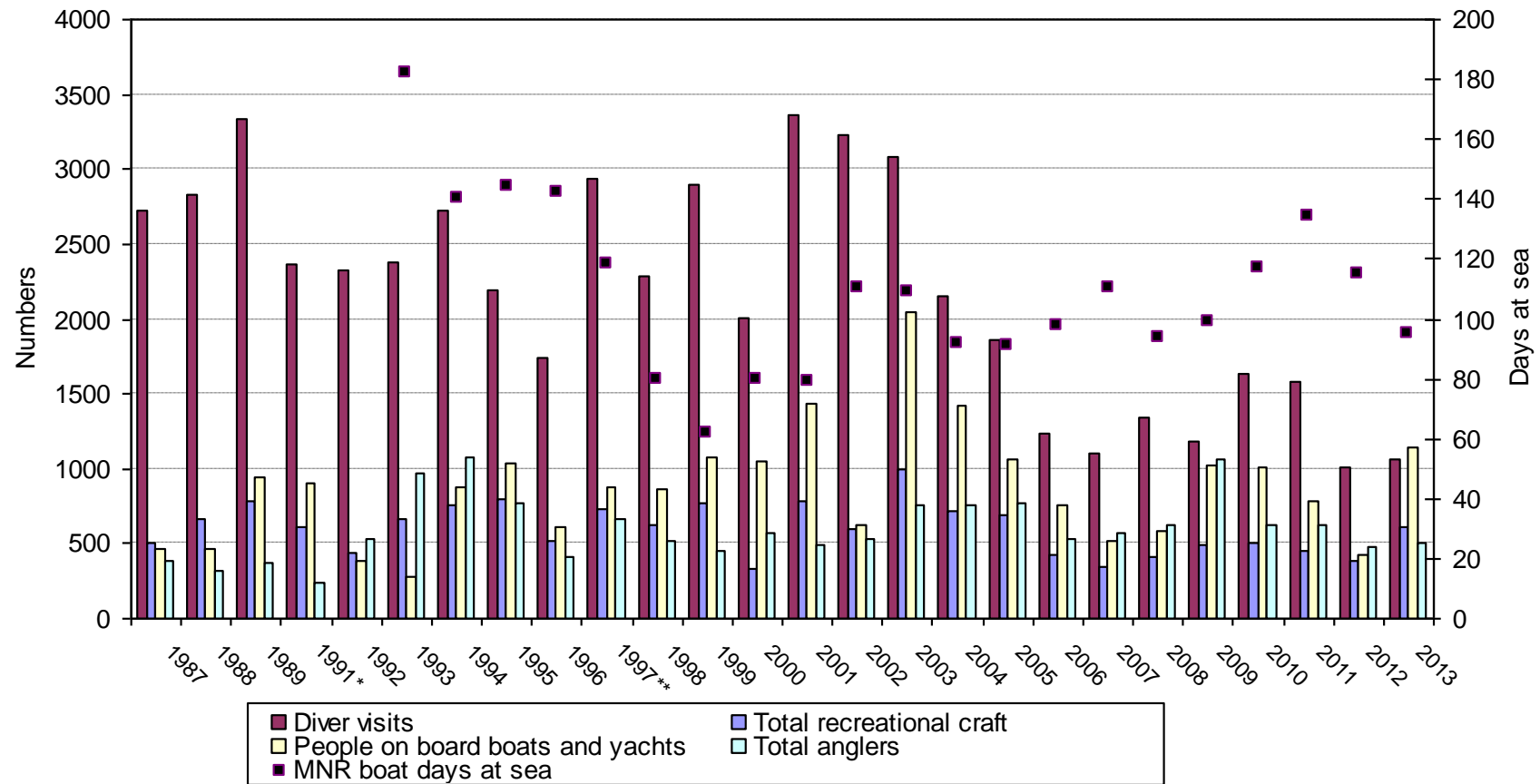
Figures do not include the routine sailings of the Dale Princess or commercial sightseeing boats passing through the MNR. The Skomer Warden and staff have again passed on records, which are very useful in contributing to the data when the MNR staff are not on the water.

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**Figure 5.1 Recorded Recreational Use Skomer MNR**



**Table 5.1 Recorded Recreational Use of Skomer MNR**

	1987	1988	1989	1991*	1992	1993	1994	1995	1996	1997**	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Diver visits (diver days)	2727	2827	3334	2368	2327	2379	2730	2192	1745	2934	2287	2893	2008	3360	3234	3089	2154	1854	1230	1102	1342	1189	1629	1579	1008	1059
Shore dives @ Martins Haven	418	511	662	34	436	678	848	537	482	814	817	500	537	537	539	522	666	458	470	411	468	293	428	368	347	242
Dive boat visits	358	410	477	341	293	325	394	354	247	361	254	378	278	349	367	350	224	257	97	127	138	106	107	144	75	89
Total yachts	147	139	237	203	99	155	213	299	173	218	183	221	232	266	121	338	218	163	128	92	120	115	140	146	118	248
Total motor boats	-	37	65	70	47	95	129	65	39	70	87	95	93	153	70	225	187	155	102	65	87	89	93	43	47	188
Canoes	-	80				91	27	74	62	84	98	79	63	48	38	80	108	110	101	68	68	184	163	121	140	176
Total recreational craft	505	666	779	614	439	666	763	792	521	733	622	773	333	779	596	993	721	685	428	352	413	494	503	454	380	612
Total people on board boats	470	460	939	905	380	273	883	1041	612	874	868	1075	1051	1435	626	2041	1424	1059	764	512	591	1022	1013	784	428	1140
Shore anglers	383	216	300	199	437	766	735	600	331	630	433	386	501	396	458	519	556	569	378	398	333	752	313	308	192	160
Boat anglers	-	108	73	43	93	199	347	173	81	30	89	60	72	55	70	243	199	210	150	168	290	306	309	322	291	346
Total anglers	383	324	373	242	530	965	1082	773	412	660	522	446	573	494	528	762	755	769	528	566	623	1058	622	630	483	506

\*\* Figures are for Jan 97 to end of March 98 All subsequent figures are for financial year April to end of March

Figure 5.2 Skomer MNR 2013 SCUBA divers

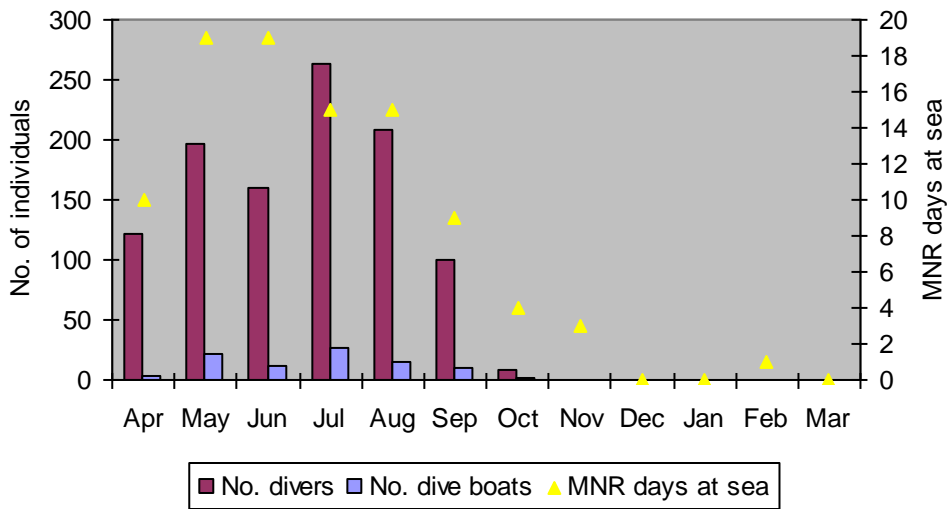


Figure 5.3 Skomer MNR 2013 Recreational Craft

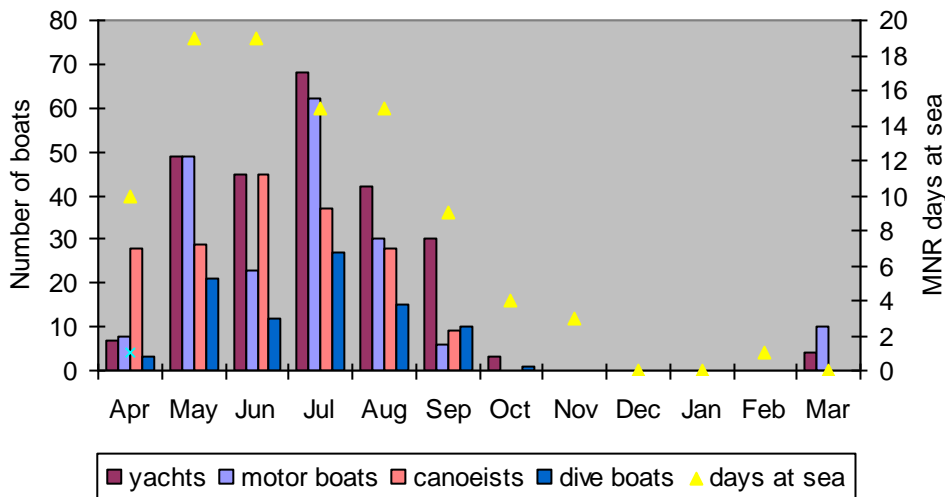
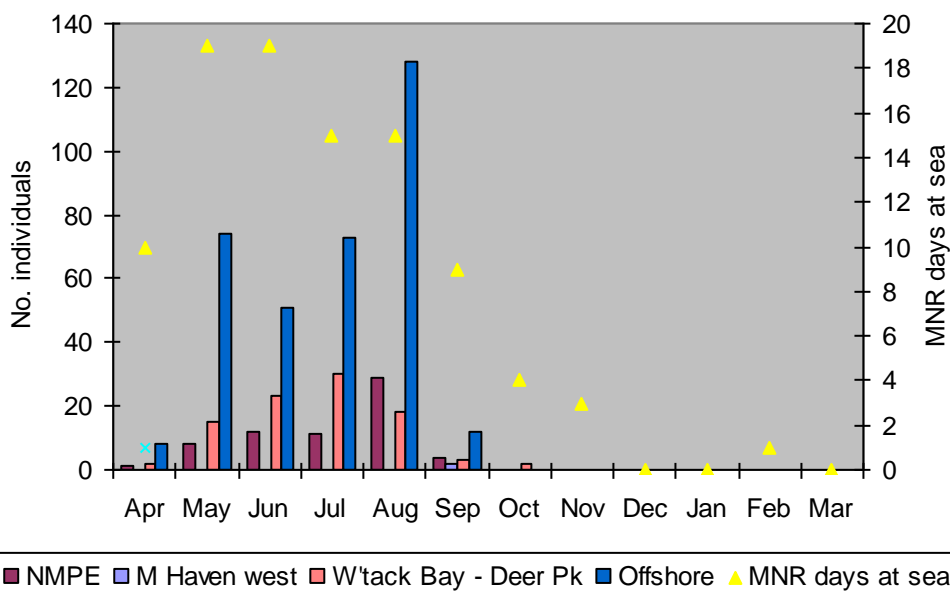


Figure 5.4 Skomer MNR 2013 Anglers



## 6 Liaison and Advisory Committees

### 6.1 Advisory Committee

*Project: ML80/01*

The annual Advisory Committee meeting was held in April 2013. Dr Robin Crump continued as chairman of the main committee, and KL and MB acted as secretariat. Presentations were given summarising the annual report and project status report.

### 6.2 Wildlife Trust South and West Wales

*Project: ML30/02*

Liaison with Skomer Island NNR staff and Wildlife Trust South and West Wales continued throughout the year on an informal basis and via the MNR Advisory Committee. MNR staff were glad to welcome new Skomer Island wardens Eddie Stubbings and Bee Buche. Bee helped out with MNR fieldwork from very early on when PN was still on secondment to Welsh Government.

The Trust was also the contractor for the annual seal pup monitoring project (see Section 7.2). This year the survey was completed by Bee Buche as David Boyle, who carried out the survey for the previous 6 years, was unavailable for the contract this year.

The management of queues for Skomer boat tickets at Martin's Haven at peak times appears to have improved further and conflicts with other users of the lane reduced.

### 6.3 Welsh Government Fisheries Enforcement

*Project: RH90/01*

Liaison has been maintained with staff of Fisheries Enforcement within WG's Department for Rural Affairs and they are on the membership of the Skomer MNR Advisory Committee.

### 6.4 Pembrokeshire Coast National Park

*Project: ML40/03*

Close liaison continues with:

Jane Hodges, Advisory Committee member and HW;

Michel Regelous: Environmental Policy;

Ian Meopham: North Pembrokeshire Ranger and member with PN of the Pembrokeshire Marine Code working group.

### 6.5 National Trust

*Project: ML30/03*

Skomer MNR staff continued to liaise with National Trust. Informal liaison is maintained with Andrew Tuddenham and Richard Ellis through the Advisory Committee and visits to Martin's Haven.

NT car park attendants at Martin's Haven continue to serve as HW's (see Section 2.2) and assisted MNR staff with the opening and closing of the MNR exhibition.

## 6.6 Other Organisations and Individuals

Liaison with a wide range of other organisations and individuals has continued.

*Project: ML30/01*

*Project: ML50/01*

*Project: ML40/01*

Local community interests included MNR neighbours at West Hook, East Hook and Treehill farms, local community council members and members of Pembrokeshire County Council staff, either through representation on the Advisory Committee or through informal meetings.

PCC continue to kindly supply water quality results for Martin's Haven (see Section 4.3.15).

KL was also involved in Pembrokeshire Fish Week.

*Project: ML60/01*

MNR staff maintain contact with the Maritime and Coastguard Agency during fieldwork and also on an informal basis. MB is an auxiliary with the local Coastguard cliff rescue team.

*Project: ML80/02*

Liaison with local fishermen continues with MNR staff making a point of introducing themselves to fishermen new to the MNR as and when opportunity presents out on the water.

*Project: ML80/06*

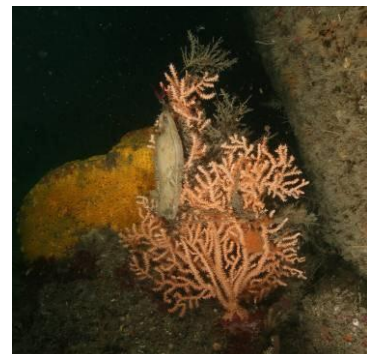
*Project: MI20/01*

Liaison with a number of different academic establishments continued in 2013:

Workers at the Plymouth Marine Laboratories have used Skomer plankton data to demonstrate how sampling can be made more efficient (see Section 7.3 and Appendix 3) and collaborative work with overseas institutions continues as before.

Dr James Bell continues his connection with the MNR, with sponge quadrat photos from Skomer being worked on by his PhD students at the Victoria University of Wellington, New Zealand. In 2012 Jade Berman's PhD was completed and in 2013 a paper published in the scientific press (see Appendix 3). The data will continue to be collected for future PhD students.

The Exeter University PhD project looking at DNA connectivity of pink sea fan, *Eunicella verrucosa*, and dead man's fingers, *Alcyonium digitatum*, has been completed. Dr Jamie Stevens reported that results indicated that the Skomer samples of *Alcyonium digitatum* form part of a continuum of genetically similar populations of *A. digitatum* from western Britain and Ireland; in turn, this group show genetic differentiation



from some samples of *A. digitatum* from the North Sea. The Skomer population of *Eunicella verrucosa* forms part of a continuum of genetically similar populations of *E. verrucosa* from southwest Britain, all of which are markedly different from samples collected from the Donegal region of northwest Ireland. He has secured funding for another PhD study and is interested in building upon the work already carried out at Skomer.

MNR staff took samples of eelgrass for Ben Jones from Swansea University. His MRes thesis on the potential use of eelgrass as a potential indicator of ecological status is currently in draft.

MB and other MNR staff carried out MarClim surveys both within the MNR and at 5 sites in Pembrokeshire. Also linked to PML is the work MNR staff carry out to monitor plankton at Skomer (see Section 7.3).

The MNR's collaboration with the Institute of Oceanology at the Polish Academy of Sciences has continued with the maintenance of settlement plates as part of a Europe-wide research project. Equipment used in the Polish studies that have been running for 5 years was badly damaged when lobster potting gear became caught up in it. The settlement frame has now been repaired (see right) and redeployed, but not without disruption to the work. A paper has been submitted to the Journal of the Marine Biological Association in 2014 (see Appendix 3 for summary).



Skomer staff continue to deal with numbers of students requesting information, help with projects or provision of work placements.

#### *Project: ML80/05*

MNR staff continue to liaise with a wide variety of other organisations and individuals, including:

Pembrokeshire Marine Code, Pembrokeshire Biodiversity Partnership, Scottish Association for Marine Science, WWF, JNCC, MCS, Pembrokeshire Coastal Forum, SEACAMS at Swansea University, the Pembrokeshire Marine SAC Relevant Authority Group, the National Coastwatch Institution, SPEEL, Nautical Archaeology Society, CEFAS and Dyfed Powys police.

In April MNR staff hosted the Chief Executive of NRW, Dr Emyr Roberts and the NRW Executive Director of Operations South, Graham Hillier. A brief presentation on the work of the MNR was followed by a trip out on the MNR on *Skalmey*.



Photo: Graham Hillier

## 6.7 Wider Marine Environmental Initiatives

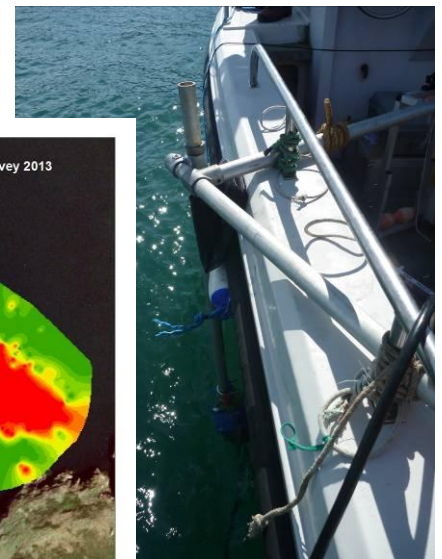
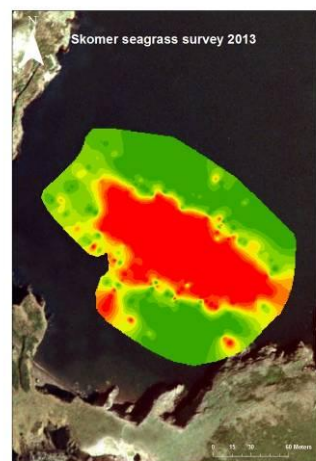
With much marine work focussing on the UK's commitments under EU Water Framework and Marine Strategy Framework Directives, Skomer MNR's long-term monitoring data has been in demand to help design monitoring programmes. PN attended at workshop organised by contractors to JNCC who are working on shallow sublittoral rock indicators of environmental condition. The particular indicators being studied were those for fragile sponge and anthozoan assemblages, for which Skomer MNR data, including environmental data as well as monitoring data, was particularly useful. It became apparent during the course of this work that datasets of the type maintained at Skomer are a vanishingly rare commodity in UK waters.



KL continued as the southwest Wales coordinator for the MCS Seasearch project in 2013 and participated in the Stackpole Bioblitz, leading marine projects at Stackpole Quay.

MNR staff have continued to be involved with MarClim (see Section 6.6 above) and carried out sediment sampling for Milford Haven Environmental Surveillance Group in Milford Haven waterway.

Colleagues from NRW Fisheries Assessment Team came out on Skalmey to test sonar methods for assessing eelgrass populations for NRW's Water Framework Directive work. We are hoping to build upon this by using next year's volunteer diving survey of the North Haven eelgrass bed as a means of ground-truthing the sonar technique.



## 6.8 Marine and Coastal Access Act

*Project: AS00/01*

PN was seconded to Welsh Government between Nov 2012 and Apr 2013 to be on the "MCZ Task & Finish group". Following consultation with the MCZ Stakeholder Focus Group the final report went to the minister with the main recommendations to Welsh Government that:

1. There should be a comprehensive review of the evidence, role and benefits of sites with a higher level of protection. It would be beneficial if such a review is done in collaboration with the other UK administrations.

2. If in the future sites with a higher level of protection are considered beneficial then the options for their selection and designation should be carefully considered and done with the involvement of local communities. In such instances, case studies for hypothetical sites could be prepared to demonstrate how novel solutions could reduce the impact on users, while still meeting conservation needs.

The Task and Finish Team concluded that there should be a different approach to using the MCZ power in Wales to meet the network objective where:

3. All options for highly protected MCZs included in the 2012 consultation should be formally withdrawn to avoid continuing uncertainty about their impact on coastal communities and businesses.
4. The level of protection and site management given to MCZs should not be pre-determined and instead should follow a risk-based approach determined on a site by site basis that seeks to maintain or recover the condition of site features.
5. There is a transparent process to identify potential MCZ sites with a socio-economic impact assessment at the earliest opportunity and active stakeholder participation throughout.
6. There is an integrated governance structure for the delivery of all marine strategies and programmes that balances technical and stakeholder involvement to find constructive solutions to manage Welsh seas.
7. Future consultations are better targeted and accessible to their intended audience.
8. There is an effective, proportionate and evidence based framework for the management and enforcement of all MPAs in Welsh seas.

After reviewing the legal obligations to designate MCZs the Task and Finish Team made the following recommendations:

9. Use the MCZ power, as necessary, to designate MCZs to meet the requirements of MaCAA and contribute to the achievement of an ecologically coherent well managed network of MPAs as required under MSFD.
10. Use the MCZ powers to manage sites and protect MCZ features from specific activities which may have an impact.
11. Use the broader range of designation powers beyond the requirements of the network if there is supporting evidence of the benefits and where there is a consensus of stakeholder support, or solely on the basis of a consensus of stakeholder support.



12. Maintain the existing management regime at Skomer once it becomes an MCZ, unless there is a need for change<sup>1</sup>.

### **Future approach to MCZs in Wales**

As part of the Welsh Government's integrated marine programme the Task and Finish Team makes the following recommendations:

13. Identify and select MCZs using a new 9 step process and following the five suggested cross-cutting themes.
14. Review the effectiveness of the existing MPAs in order to maximise their biodiversity benefits and explore the opportunities to enhance their social and economic benefits particularly in education, tourism and rural business.
15. Develop an effective and consistent MPA management framework to ensure that all MPAs in Wales are well managed, with reference to the work to date of CCW<sup>2</sup> and the proposal submitted by the Welsh Fishermen's Association '*Striking the Balance*'.
16. Review stakeholder engagement arrangements as part of an integrated marine governance structure to support effective policy making and delivery at a community level in Wales.

The Report of the Task and Finish Team on MCZs in Wales can be found on the Welsh government website under 'Marine Conservation Zones – Task and Finish Team. ;

A summary of responses to the MCZ consultation – *Potential Site Options for Welsh Waters* can be found on the Welsh Government website under 'Marine Conservation Zones (MCZs) - Potential site options for Welsh waters'

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<sup>1</sup> Upon commencement of the legislation in Wales Skomer Marine Nature Reserve will become known as Skomer Marine Conservation Zone.

<sup>2</sup> MPA Management in Wales 1: Overview of current MPA management in Wales and a summary of new MPA management tools. MPA Management in Wales 2: Evaluation of current MPA management in Wales.

## 7 Science

### 7.1 Research and Education Subcommittee

No meetings of the research and education subcommittee were held in 2013.

More detail on all of the research projects undertaken in the MNR can be found in the “Skomer Project Status Report 2013/14”.

### 7.2 Contract Science

#### **Project code: RA03/01 Monitoring Grey Seals**

Grey seal pup production on Skomer Island breeding sites was monitored under contract by the Wildlife Trust South and West Wales and by MNR staff on the mainland sites (See Appendix 2 for data, Appendix 3 for report).

In 2013 total pup numbers for the MNR reached 324, which is 98 pups higher than the average for the last 22 years. Pup survival was 69%, which is 10% below the average. The majority of deaths were caused by abandonment or separation and by periods of harsh weather. There were no signs of disease. Pup production was 41% in September, 43% in October, 11% in November and 5% in August. The week of peak pup production was week 40 (1-7<sup>th</sup> October).



2013 is the sixth year that an attempt has been made to photograph all the breeding cows on Skomer and the results indicate that Skomer does not have an isolated seal population. In 2012 69 of the identified 147 cows (47%) (Boyle 2012) and in 2013 21 of the identified 59 cows (36%) are known to have pupped on the island in previous years (Buche 2013), although less cows were successfully photographed in 2013.

Valuable liaison with the Cornwall Seal Group has helped in the photo identification work and 43 matches of seals have been identified for Cornwall and Skomer MNR between 2007 to 2014 (Sayer pers. comm.). There were 3 further matches of Skomer seals with animals at Ramsey Island.

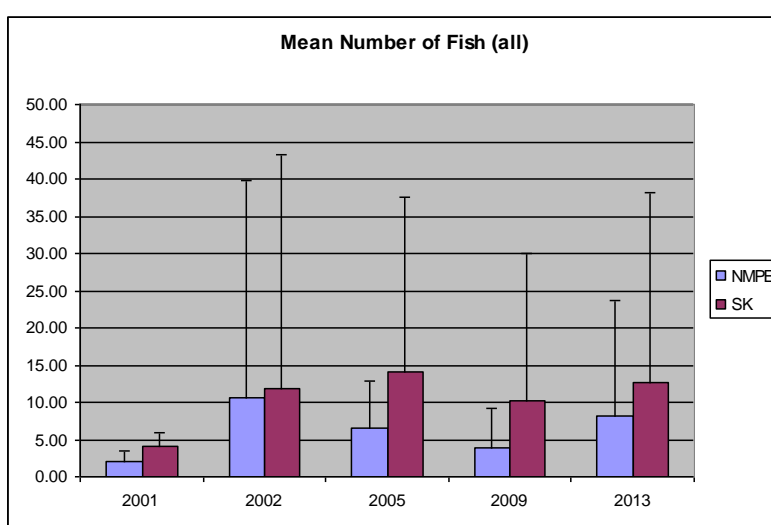
Summary graphs are shown in Appendix 2. Notable is the increasing numbers of pups born at mainland sites over the past 10 years.

### 7.3 In-House Monitoring

#### **Project code: RA33/01 Monitor Territorial Fish Populations**

The territorial fish population survey was completed over two weekends using volunteer divers and local dive charter boats.

Sites along the Skomer north coast and the north Marloes peninsula were surveyed in 2013 and data compared to 2009, 2005 and 2002 surveys. The results indicate smaller fish populations (wrasse and other species) at north Marloes peninsula sites compared with north Skomer sites. The difference in abundance between the two areas is most marked for wrasse species, especially from 2005 onwards. However, it should be noted that these differences are unlikely to be statistically significant as the variance attributed to these figures is very high (see S.E 95% bars on the graphs). High variability is a feature of any direct method of counting fish.



**Project code: RA01/01 Record Cetaceans**

The crew of the Dale Princess have continued to record cetacean sightings within the MNR. These records are collated along with sightings from Skomer Island staff and MNR staff.

**Project code: RB01/01 Record Vagrant & Alien Species**

Vagrant and alien species were recorded by MNR staff and the crew of the Dale Princess. Species recorded in 2013 included sunfish (*Mola mola*) and a basking shark (*Cetorhinus maximus*) spotted by Skomer Island staff in May.

**Project code: RB03/01 Monitor Littoral Habitats / Communities**

Viewpoint digital photographs were taken for all sites on the Deer park and at Martins Haven, but not for those on Skomer Island. All the permanent quadrat sites within the MNR were surveyed in 2013.

The results in summary:

Barnacle coverage has been variable between sites over the last 8 years. In 2011 a decrease of barnacle coverage in the upper shore was found across most sites which has stabilised in 2012 with most sites showing an increase in 2013. The decrease at all sites in the middle shore and a drop at all sites except South Stream in the lower shore stabilised in 2012 and 2013 saw a general increase.



The mean limpet size recorded at sites shows a stable trend at most sites, with greatest fluctuations at the Lantern.

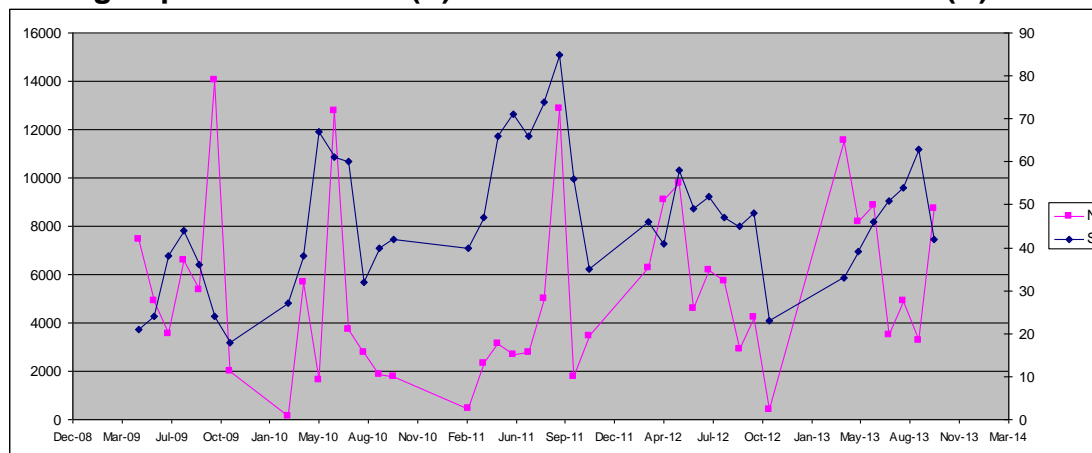
In the middle shore highest numbers of limpets were found on north facing shores, but these figures tend to be the most erratic. 2007 appears to have had a dip in numbers on 6 of the sites, which all showed an increase the following year. On the middle shore the numbers have been stable from 2009 onwards with an increase in numbers at all sites in 2012 followed by a slight decrease in 2013. In the upper shore most sites have a low abundance of limpets. Double cliff has significantly more limpets than any other site (north facing shaded cliff) and an interesting declining trend from 2003 – 2006.

**Project code: RB04/01 Plankton Recording**

Samples continued to be taken in 2013. The net was changed in 2013 to a 200um zooplankton net vertically hauled from 40m to replicate the methods used by Plymouth Marine Laboratory to allow comparison with their existing “L4” time series.

Samples were taken from March 2013 to November 2013 and these were sent to Dr D. Conway of SAHFOS (Plymouth Marine Biological Association).

**Average Species richness (S) and total number of individuals (N) 2009- 2013**

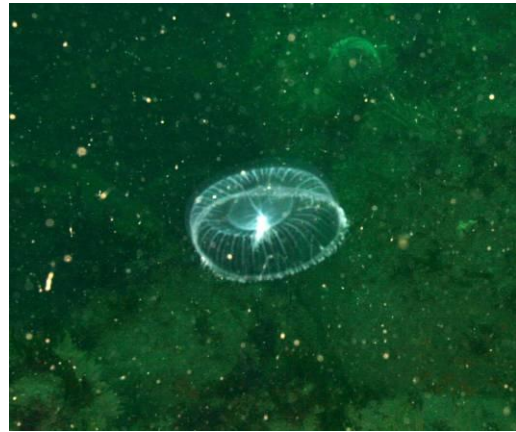


Year	S	N
2009	53	6274.071
2010	90	3804.541
2011	112	3827.228
2012	93	5459.052
2013	95	6998.129

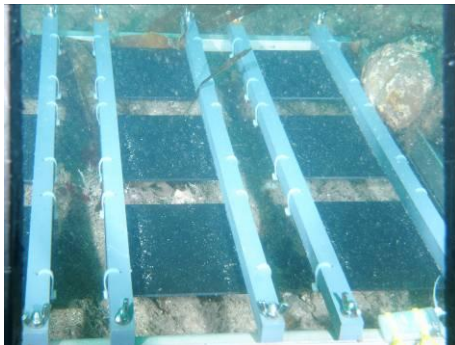
(S = number of species, N = numbers of individuals)

2011 had the highest number of recorded species, but one of the lowest abundances. The higher number of individuals in 2009 and 2013 will be due to different nets being used; in 2009 a 63um mesh was used & in 2013 the mesh on the collecting bottle was changed from 400um to 200um.

Plankton sampling work at Skomer featured in a poster published by Plymouth Marine Laboratory: Cost-effective method for establishing an ecological baseline of the zooplankton at Skomer Marine Nature Reserve. Andrea McEvoy, Mark Burton, Paul Somerfield and Angus Atkinson (2013), See Appendix 3.



### Project code: RB06/01 Species Recording



Skomer MNR continued to host a Europe-wide research project led by Professor Piotr Kuklinski from Warsaw Oceanographic Institute and the Natural History Museum London. Settlement plates at different locations within the MNR have been maintained with a monthly programme of photography and panel exchange at each site. This project is already established at sites in Spitzbergen, the Baltic and the Mediterranean. The Skomer based monthly panels have now been analysed for the 2009 to 2011 data and a paper is

currently being prepared (see Appendix 3 for summary).

Crawfish *Palinurus elephas* was recorded at three sites in the MNR during monitoring dives. This data has been entered onto the National Seasearch crawfish database.

One highly unusual species record for the Deerpark headland was found on the coastal path, but we suspect may have originated in the MNR! This curled octopus (*Eledone cirrhosa*) was discovered by one of our Honorary Wardens, somewhat the worse for wear (the octopus, that is!).



**Project code: RM03/01 Monitor Epibenthic Rock Communities:Meso-Scale**

One set of stereo photographs was taken at the North Wall and one at the Thorn Rock site for epibenthic rock community photo monitoring in 2013.

**Project code: RM03/04 Monitor Sediment Seabed Communities**

Grab sampling was carried out at all 12 sites. Results of sample analysis are currently being written up.



**Project code: RM13/01 Monitor Sponge Populations**

Annual sponge monitoring photographs were taken at all transects in 2013 for both the fixed transects quadrats and for the quadrats set up for the PhD study into seasonal variation in sponge communities at Thorn rock that has been running since 2006 (see Section 6.6).



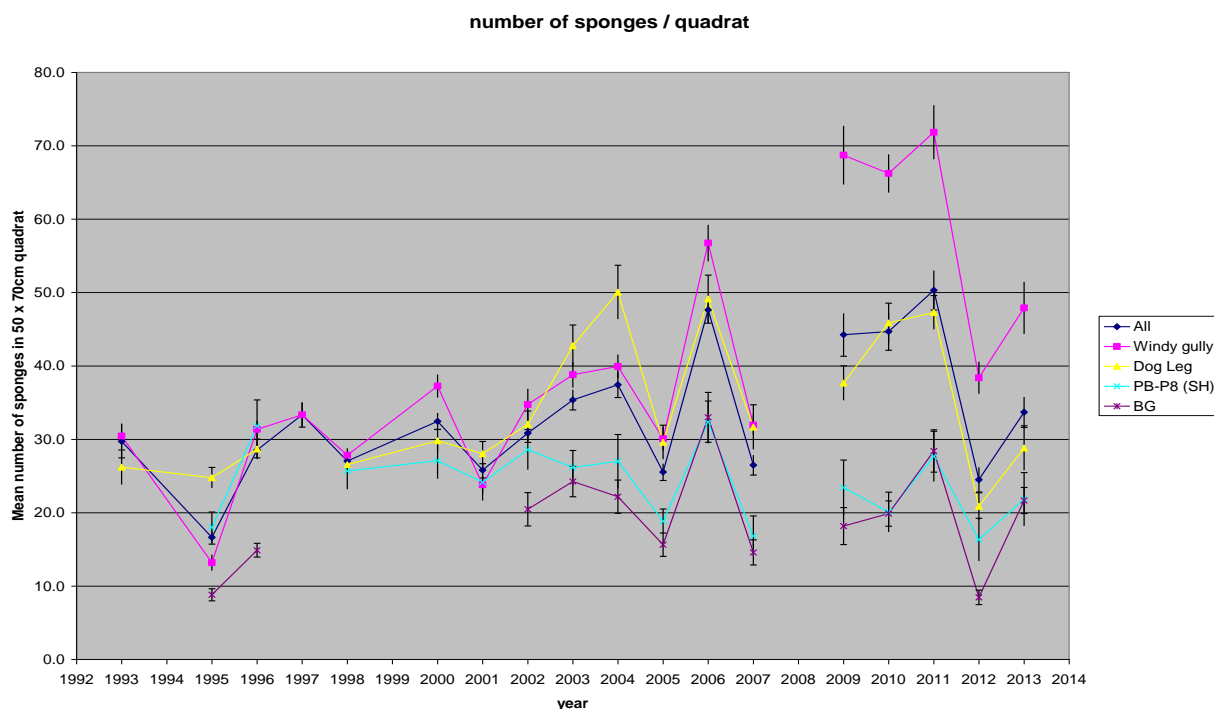
The seasonal variation project is being run at Wellington University, New Zealand and is comparing Skomer sponge assemblages with those of other sponge assemblages in Indonesia and New Zealand. The PhD by Jade Berman was completed in 2012 and a scientific paper was published in 2013 in the Journal for Nature Conservation (see Appendix 3).

The seasonal photo data set will continue to be collected as part of the Reserve's sponge monitoring programme to see if there are any larger-scale patterns that operate on a longer timescale than has currently been recorded. A winter dataset between October and April is also needed to provide the full seasonal variation patterns.

In 2013 samples were taken in May, July & October. A new digital camera set-up was used in July & October and this has improved image quality.

Results from the fixed transect quadrats:

### Mean number of sponges counted at 4 sites 1992 - 2013



The improvement in the image quality & resolution has meant that more sponge entities have been recorded from 2009 onwards than in previous years. However in 2012 there was a drop in the numbers of sponges seen across all transects. In 2013 all transects showed an increase in abundance of visible sponges. Some of this may be due to poor visibility conditions in 2012.

### Project code: RM23/01 Monitor *Eunicella* Population

In 2013 there was no confirmed loss of any naturally-attached fans from the 2012 season. WAY15, missing in both 2011 and 2012, was re-found in 2013. SSFG 23, missing in 2012, was not found so its status as a loss will be established in 2014. SMD 6 was not found in 2013 for the first time.

POL 4 which was found at the base of the cliff in 2012, and subsequently attached to a piton placed in the fans original position using cable ties was still in position and looking healthy in 2013. (See Section 4.3.2).

A new sea fan was added to the Pool site survey. This a “double” sea fan found whilst setting up a new *Pentapora foliacea* survey area at this site.

There were no new recruits recorded in 2013. The cluster of 5 baby fans at Bull Hole are all present but very little growth has been observed since 2006 when



they were first found.

### Population survey results 1994 -2013:

year	Sites surveyed	Total fans recorded	Total natural fans	Total attached fans	New recruits (babies)	Losses (confirmed)	Missing (to be confirmed)
1994	3	30	30				
1995	3	29	29			1	
1996	3	29	29				
1997	4	35	35				
1998	4	35	35				
1999	0						
2000	5	50	50				
2001	5	52	52			1	
2002	9	81	80	1		1	
2003	9	95	94	1	1		
2004	9	97	96	1			
2005	10	110	107	3	1	1	
2006	10	115	112	3	7		
2007	10	117	114	3	1	2	
2008	10	122	118	4		1	
2009	10	124	117	7			
2010	10	122	116	6		3	
2011	10	121	117	4		3	2
2012	10	121	116	5		1	1
2013	10	121	116	5			2
<b>totals</b>					10	13	

Condition assessments of sea fans were carried out again in 2013 and detailed results can be seen in Skomer MNR Project Status Report 2012/13.

In 2009 a large drop in necrosis was observed with records of its presence in only 12% of the surveyed sea fans, however the occurrence of necrosis increased in 2010 to 54% and was 44% in 2011, 55% in 2012 and 43% in 2013. The average level of necrosis since 2002 (12 years) is 52%. An annual average of 60% of sea fans have been recorded with attached or entangled epibiota for the last 12 years of surveys. In 2013 this was on 63% of the sea fans. The epibiota include tangled and attached dog fish eggs, drift algae, bryozoans and hydroids. On occasion bryozoan sea fingers, *Alcyonidium diaphanum* and deadman’s fingers, *Alcyonium digitatum* have been recorded growing on sea fans. Entanglement with epibiota and in particular dog fish eggs if extensive and persistent can cause some damage to the sea fan tissues.

Two Pink sea fan slugs *Tritonia nilsodhneri* were recorded in 2013, found on two different sea fans at Rye Rocks. (Photo by John Archer Thompson).



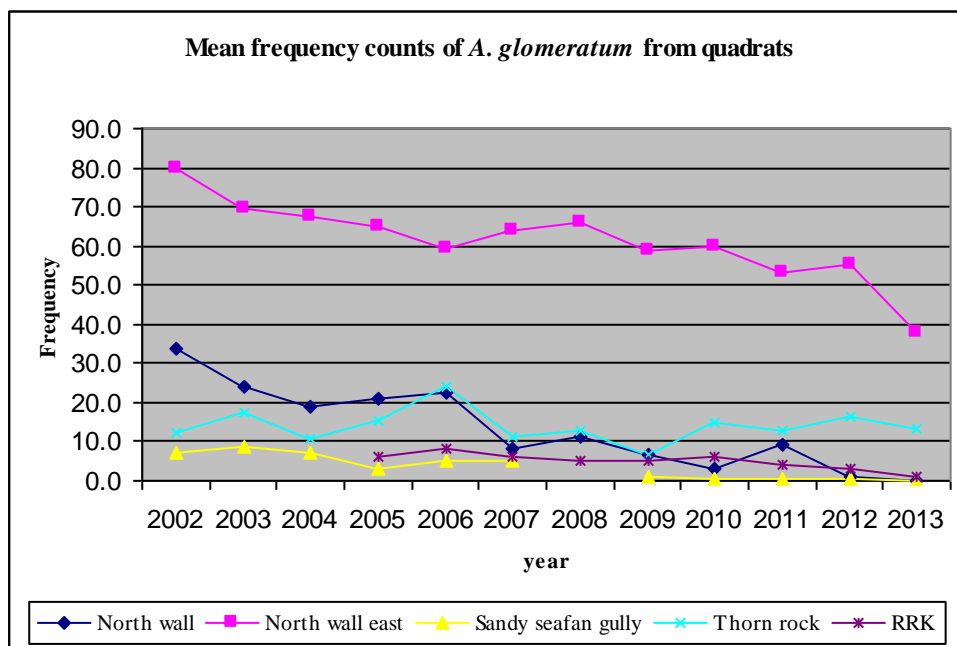


**Project code: RM23/03 Monitor *Alcyonium glomeratum* Population**



The frequency of *A. glomeratum* colonies declined at North wall & Sandy seafan gully.

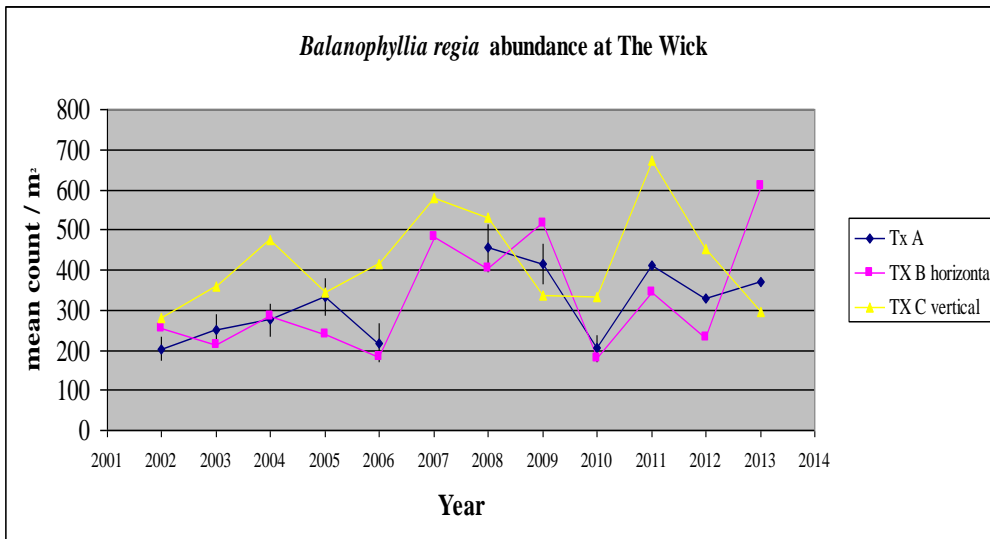
Graph of the mean frequency of *A. glomeratum* from within the quadrats 2002 to 2012



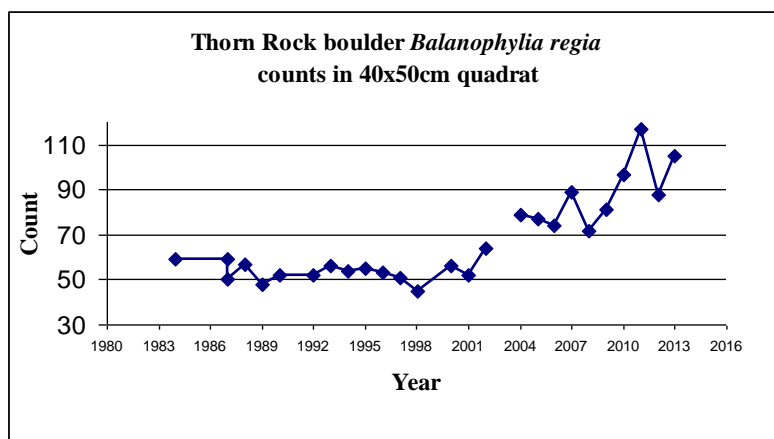
**Project code: RM23/04 Monitor Cup Coral Populations**

All quadrats were completed for both Devonshire cup coral, *Caryophyllia smithii*, and the rarer scarlet and gold cup coral *Balanophyllia regia*.

The average number/m<sup>2</sup> of *B. regia* has fluctuated at transects A, B and C. The variability is caused by dense covering of silt across the site and occasional very poor photographic conditions hiding individuals.

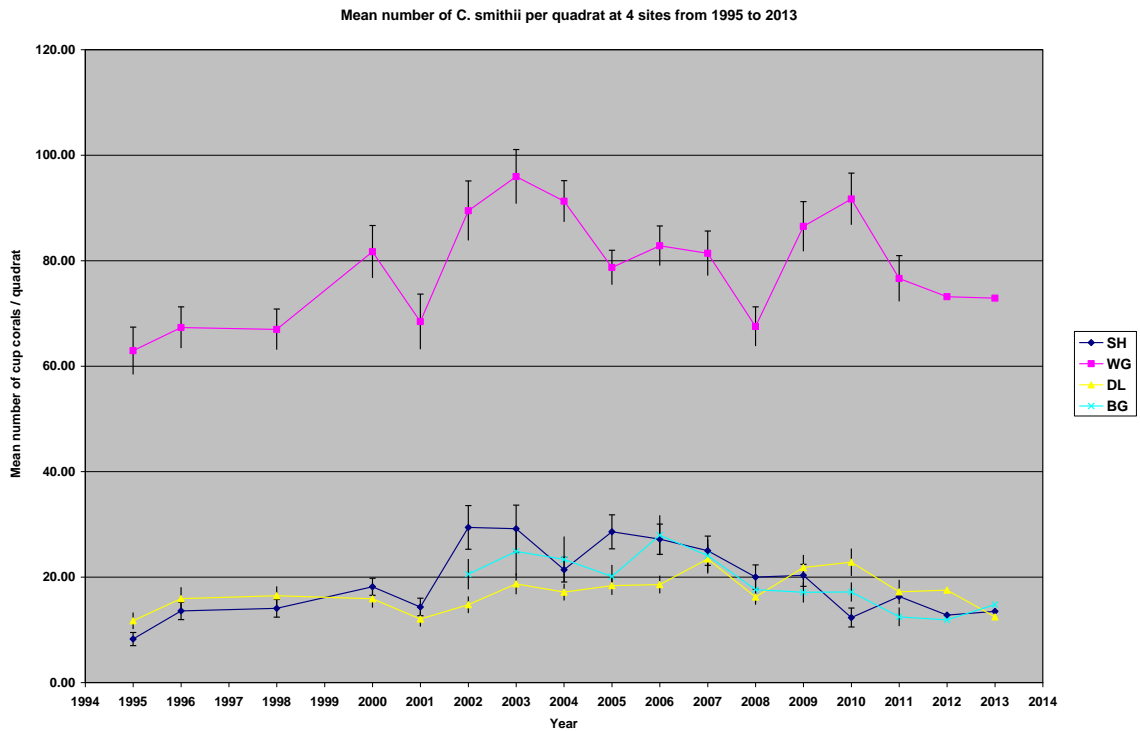


At Thorn Rock individuals have been traced for 20 years in a single 40 x 50cm quadrat. Some evidence of recruitment has been observed, numbers have shown a general increase between 1998 and 2013. Variability will occur due to changes in surface sediment which obscures small individuals, especially on horizontal surfaces.



*Caryophyllia smithii* at Thorn Rock shows changes in mean abundance, this maybe due to variable levels of surface sediment affecting the actual numbers visible during recording.

The Windy gully (WG) quadrats show significantly higher counts compared to the other sites, this is most likely due to it being the only vertical wall site where less surface sediment accumulates. The other three sites area all on horizontal rock.

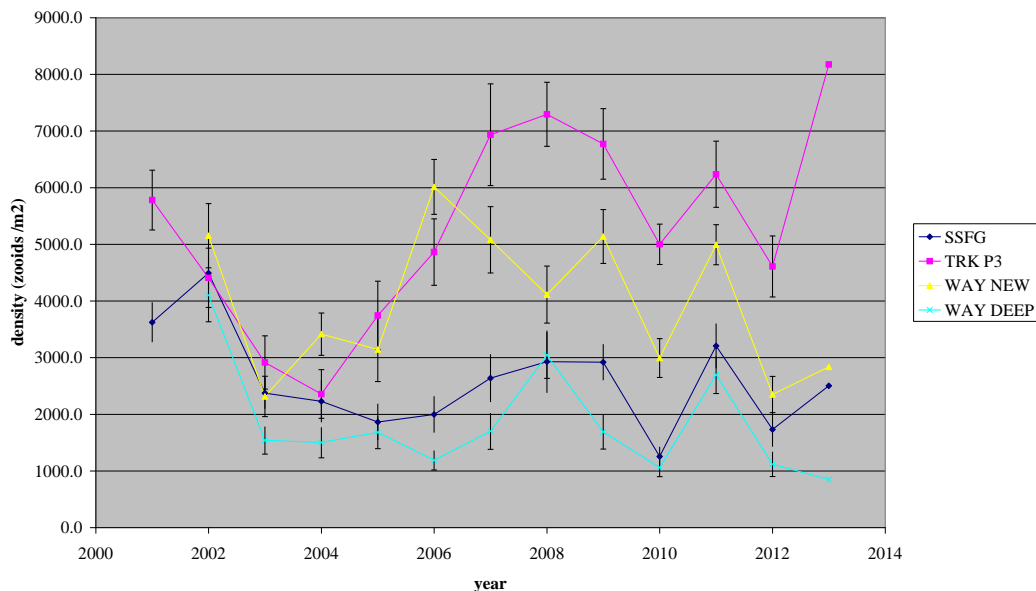


**Project code: RM23/05 Monitor *Parazoanthus axinellae***

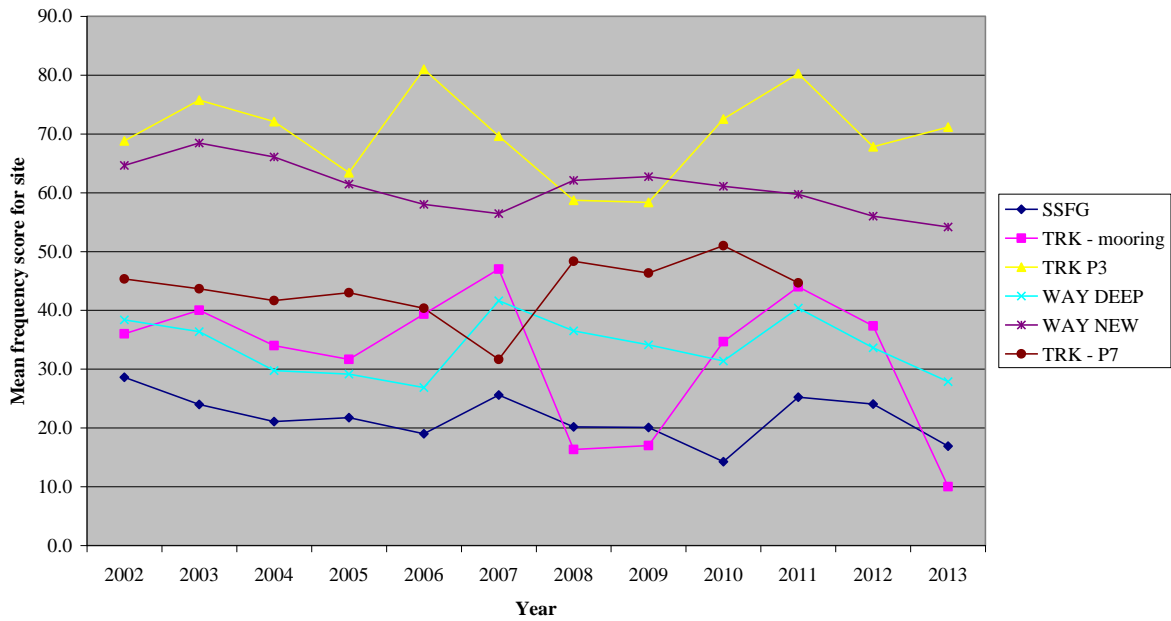
All the colonies are still present.  
 The density of polyps seems very erratic, whereas the transect frequency counts (which indicate the size of the colony) are more stable.



Mean *P. axinellae* density / m<sup>2</sup>



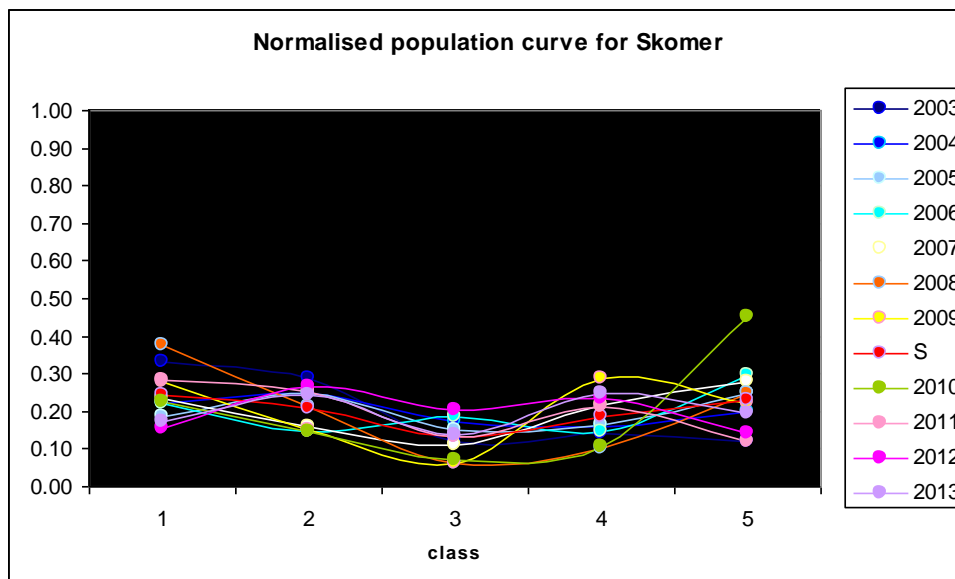
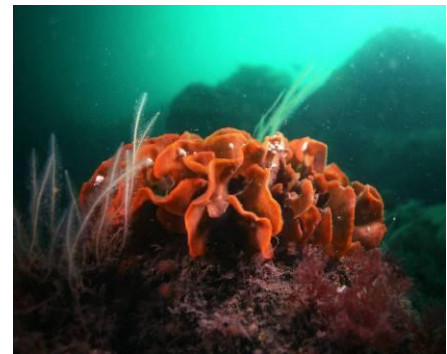
**Parazoanthus transect results 2002 - 2012**



**Project code: RM63/01 Monitor *Pentapora* Population**

In 2014 further sites at the Pool were mapped and included into the dataset.

The morphological classification method developed by RG in 2006 and revised in 2010 has continued and applied to the 2013 data set.



Unfortunately only by applying this method to an undisturbed area of seabed where *Pentapora* are present can an understanding be achieved of normal community functioning of *P. foliacea*. Currently there are no such areas within the Skomer MNR. For more details see Skomer MNR Project Status Report 2013/14.

**Project code: RP04/01 Record Meteorological Factors**

A Campbell Scientific Environmental Change Network (ECN) compatible weather station with a CR1000 measurement and control system has been used for meteorological data recording since 2006. In March 2009 the Skomer MNR data was linked to the Environmental Change biodiversity Network project (ECBN), which in turn links into a UK wide project.

In previous years data from the weather station has been automatically updated onto the 'CCW automated weather stations and buoy's' website from where it could be viewed graphically or downloaded in spreadsheet format. The website no longer appears to be maintained and weather data is no longer available although images from the two webcams mounted near the weather station in the Deer Park coastguard hut can still be seen.

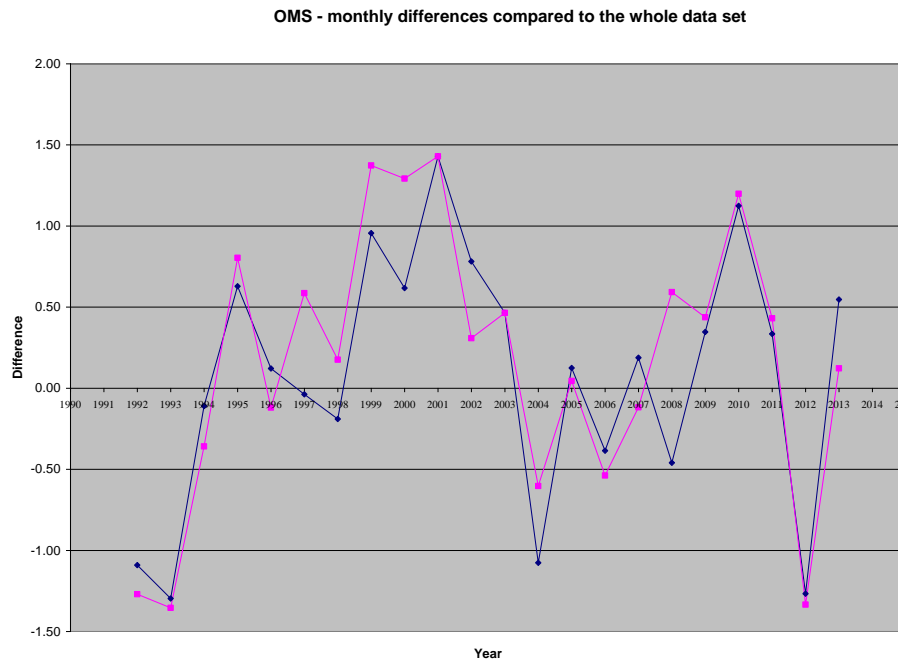
The weather summary for 2013:

Maximum temperature (°C)	25 (July)
Minimum temperature (°C)	-1.6 (Mar)
Annual Maximum gust (knots)	80.9 (Nov)
Direction of Maximum gust	235.6

**Project code: RP63/01 Monitor Seawater Turbidity / Suspended Sediments**

Turbidity was measured in Skomer MNR by Secchi disc at the OMS and at Thorn Rock and also recorded by a YSI 6600 multi-parameter sonde, mounted on the OMS data buoy 1m below surface.

34 Secchi disc measurements of water turbidity were made at OMS and 30 at Thorn Rock in 2013. The graph shows the monthly mean summary at the OMS from 1992 to 2013. Plotting the mean difference between the monthly average and the overall average highlights any significant fluctuations. 2012 appears to have been more turbid than the previous 18 years. This would tally with the diver observations of very poor visibility in the 2012 field season. In 2013 the diving visibility was a lot better and the Secchi readings are much higher.



Plot of the mean differences between the monthly average Secchi reading and the overall average at the OMS site.

(All months = pink, June to Sept = blue line)

For more detailed results see Skomer MNR Project Status Report 2013/14

**Project code: RP63/03 Monitor Sea Water Chemistry**

Bathing water quality data for Martins Haven continues to be obtained from Pembrokeshire County Council (see section 4.3.15 for 2013 data).

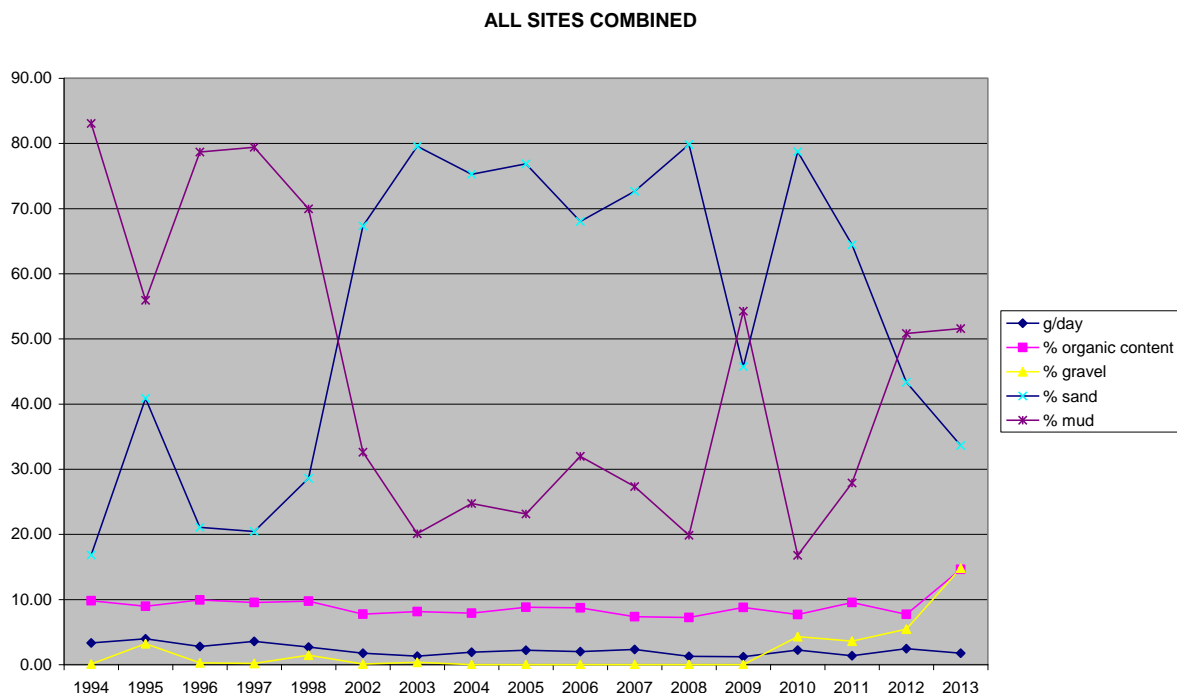
The YSI 6600 multi parameter sonde mounted on the OMS data buoy also measures seawater salinity, pH, dissolved oxygen and chlorophyll. Detailed analysis of the results are in the Skomer MNR Project Status Report 2013/14.

**Project code: RP63/04 Monitor Seabed Sedimentation**

Seabed sedimentation samples were collected at Skomer MNR using passive sediment traps: OMS site and Thorn Rock.

In 2013 the sediment samples were sent to the NRW Llanelli Labs for analysis. The analyses carried out there are slightly different in methodology from those previously used, which explains some of the changes seen in particle sizes and in the trace metals recorded.

## Graph of combined results from OMS & TRK 1994 - 2013



Gravel content increased in 2013 – mainly at the OMS site. 2012 saw mud become more prevalent than sand and this continued into 2013.

Between 1994 and 1998 mud content was very high, but in 1998 the dredge spoil dumping site for Milford Haven was moved 20 miles off shore, which might explain why, when records began again in 2002, the mud content was much lower.

### Project code: RP64/01 Record Seawater Temperature

Seawater temperature data was collected at the Skomer MNR Oceanographic Monitoring Site (OMS) using a Valeport Series 600 MkII conductivity, temperature, depth and salinity probe at depth intervals of 5m from the surface to just above the seabed. Profiles were recorded between March 2013 and November 2013 in conjunction with projects to measure turbidity and salinity.

Annual maximum and minimum seabed temperature records from 2000 to 2013 are as follows (data from Vemco minilog at 19m BCD):

Temperature °C	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Minimum	8.4	7.27	8.7	7.6	7.7	7.36	7.5	8.8	8.4	7	6.9
Maximum	16.27	16.3	15.6	17.1	16.76	16.4	16.3	16.3	16.3	16.8	16.8
	<b>2011</b>	<b>2012</b>	<b>2013</b>								
Minimum	7.6	8.0	6.98								
Maximum	15.9	16.6	16.82								

2009 & 2010 both had very cold air temperatures in the winter and the seawater temperature also dropped to 7 °C, the coldest recorded this decade. 2012 had a mild

winter and the summer was average. 2013 had a very cold April – May with sea temperatures remaining 1°C below average.

10 Onset Hobo temperature / light loggers have also been placed at various intertidal sites around the Reserve and at other locations in Pembrokeshire. These loggers provide a record of the temperature regime experienced by sessile organisms in the intertidal habitat.

#### **7.4 Data Handling Development**

The IT infrastructure at Fisherman's Cottage has been highly problematic during 2013 and into 2014 despite some improvements in back-up arrangements. Staff have been left without internet or e-mail access for weeks at a time and even access to documents on the MNR office's own server has been intermittent, causing much frustration. Fortunately NRW's field IT support has been very good despite high workloads linked to the merger of the three organisations into NRW.

MNR staff continue to enter MNR records into Marine Recorder, which was CCW's corporate database.

MNR staff are awaiting developments with the NRW website to establish how reports, and other MNR information will be made available.



## 7.5 Other Work

MNR staff continue to be involved with wider initiatives especially in SAC monitoring, for example:

Colleagues from NRW Fisheries Assessment Team came out on Skalmey to test sonar methods for assessing eelgrass populations for NRW's Water Framework Directive work. We are hoping to build upon this by using next year's volunteer diving survey of the North Haven eelgrass bed as a means of ground-truthing the sonar technique.



MNR staff assisted with sampling at lagoon sites at Pickleridge, Neyland and Carew;

Marclim intertidal surveying and deployment of data loggers was carried out at a variety of sites within Pembrokeshire Marine SAC;

Intertidal and subtidal surveys at Pembroke power station;



Sediment sampling in Milford Haven for the Milford Haven waterway Surveillance Group.



## 8 Education and Interpretation

### 8.1 Research and Education Subcommittee

The Research and Education Committee did not meet in 2012.

*Project: M150/02*

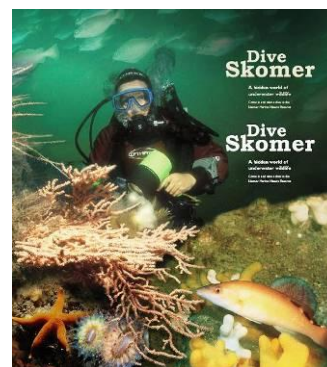
Both the MNR interpretative booklet “Stars, squirts and slugs...marine life in an underwater refuge” and the computer generated poster have been in great demand, however stocks of both are now exhausted and unlikely to be replenished in time for the 2014 season (See Section 4.2). During the autumn the ‘Seal watching’ leaflet is also very popular (See Section 4.4.7)

### 8.2 Fisherman’s Cottage MNR Exhibition

*Project: M150/01*

The MNR exhibition at Fisherman’s Cottage remains popular with the visiting public. In 2008 and 2009 MNR staff recorded visitor numbers of 26-28,000. However, since 2009 equipment malfunction has meant no numbers were collected. Replacement logging equipment has been acquired and will be installed for 2014.

The exhibition entrance panel (right) suffered some form of chemical reaction during 2013 and has had to be replaced.



### 8.3 Other Initiatives

The MNR ‘Marine Day’, held in July 2013, was well attended by a keen tribe of young enthusiasts. The event is primarily aimed at local children and holiday visitors, with activities including taking part in a “seashore safari” at Martins Haven and a chance to look at marine creatures brought up by MNR divers. Marine themed craft activities followed at Marloes village hall with some inventive and colourful results.



## 8.4 Talks, Events and Articles

*Project: MI20/01*

Skomer MNR liaison with academic and educational bodies continued. This included talks to academic groups and supplying information to students (see Section 6.6).

*Project: MI00/01*

KL gave a presentation at the 'Pembrokeshire Wildlife sightings' event held in November, organised by Pembrokeshire Coastal Forum.

KL ran a "snorkel safari" for local school children during Pembrokeshire fish week in June 2013. The event was run in conjunction with Pembrokeshire Marine SAC officer, and staff from West Wales Divers and Dale Fort Field Centre.

MB gave a talk to Cardiff University marine geography field trip at the NT Stackpole Field centre.

KL gave two guided seal walks around the Deer Park at events organised by Darwin Science Initiative and Planed.

PN presented some of the work of the MNR to the Pembrokeshire Biodiversity Partnership event. He also prepared a poster display for the NRW Board meeting in Llanelli.

## 8.5 Media

*Project:ML70/01*

Media interest in the MNR was very low key in 2013, although staff did help programme makers from S4C with local contacts for the "Codi Hwyl" (Raise the Sails) programme and with others from the BBC interested in seals.

## 9 Acknowledgements

The MNR staff wish to thank all those who contributed to, or supported in any way the management of the MNR in 2013.

Thanks to:

- Contributors to the Advisory Committees, especially Dr Robin Crump who chairs the main committee.
- Honorary Wardens;  
Eddie Stubbings, Bee Buche and Skomer Island NNR staff;
- Rob Gibbs, John Archer Thomson, and Blaise Bullimore for diving support;
- The crew of the *Dale Princess*;
- All our Honorary Wardens for contributing to user records and Barry and Lionel for making sure the exhibition is opened as often as possible.
- 'Neptune's Army of Rubbish Collectors' for organising and completing the underwater litter picks in the MNR;
- The volunteer diving teams that were involved in the Territorial fish survey and the skippers of the dive charter vessels.

With apologies to anyone omitted from above.

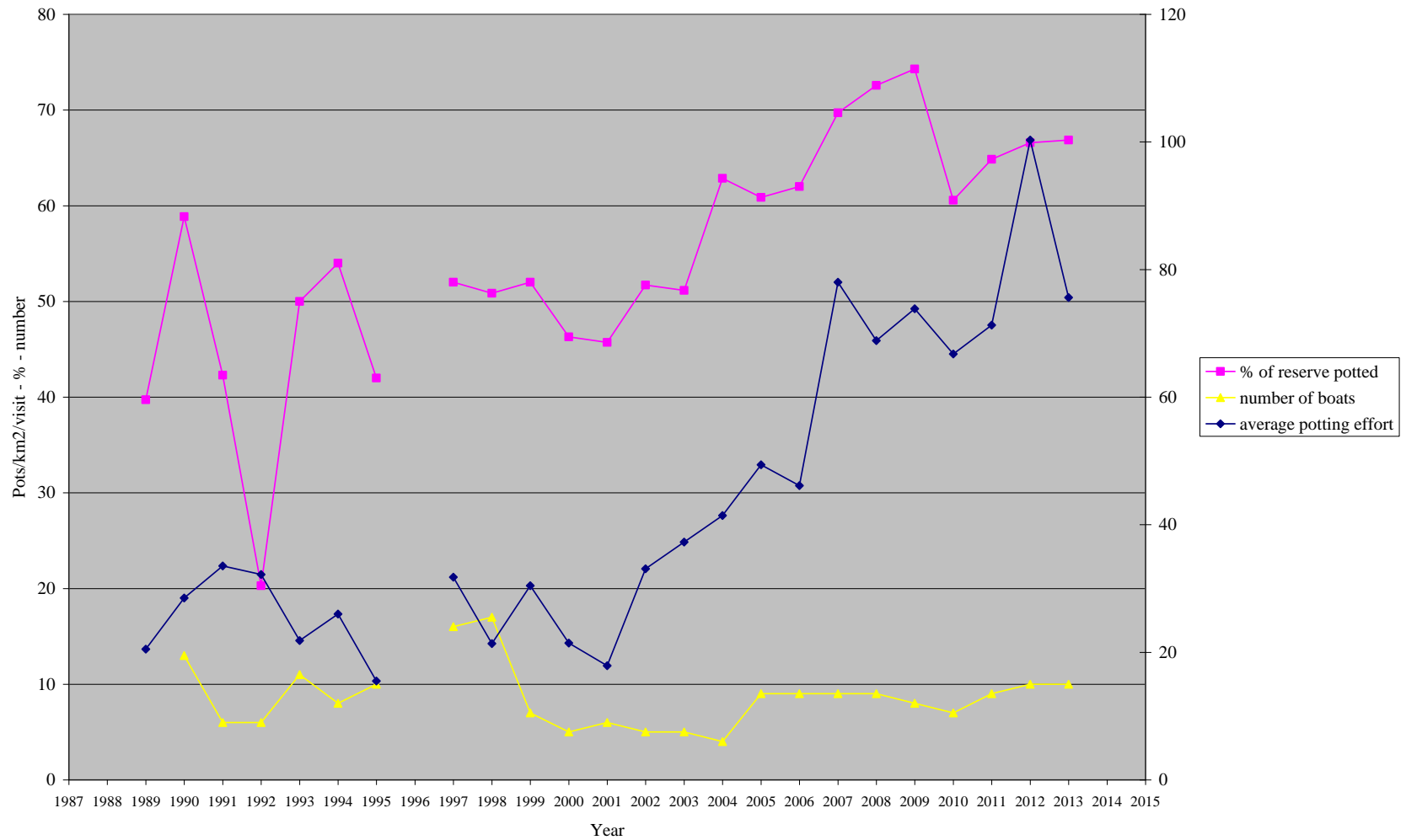


# 10 Appendices

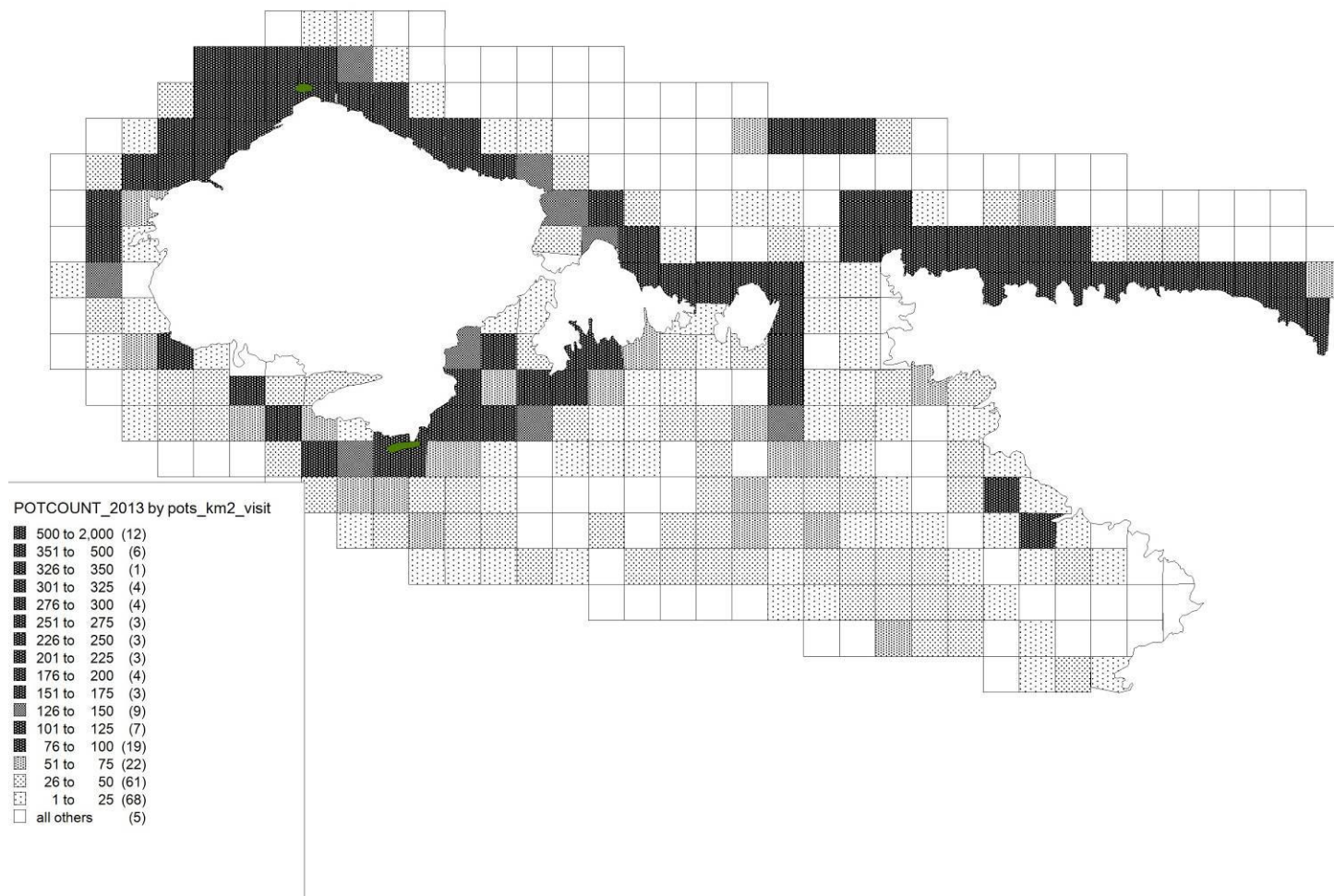
## Appendix 1

## Fishing Effort In The Skomer MNR 2013

Summary of fishing effort in the Skomer MNR



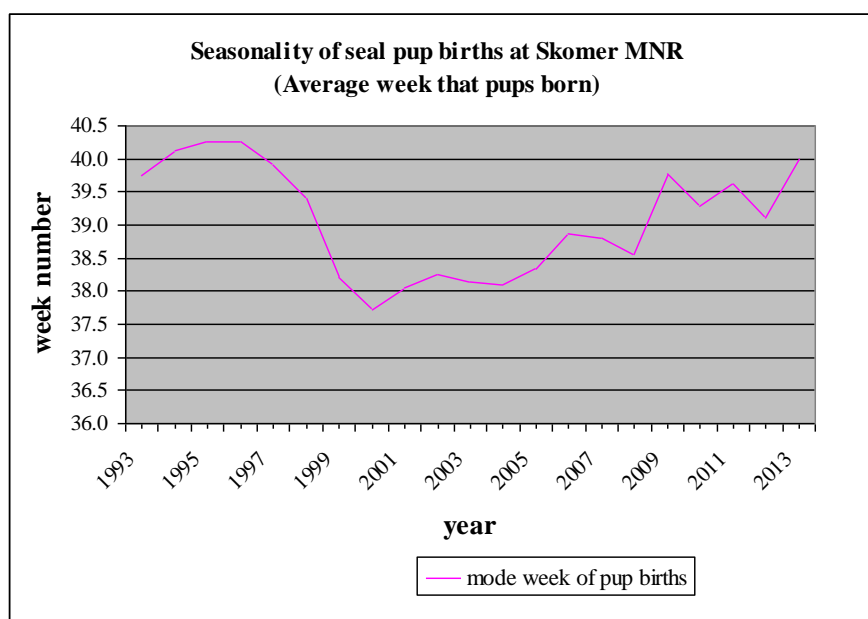
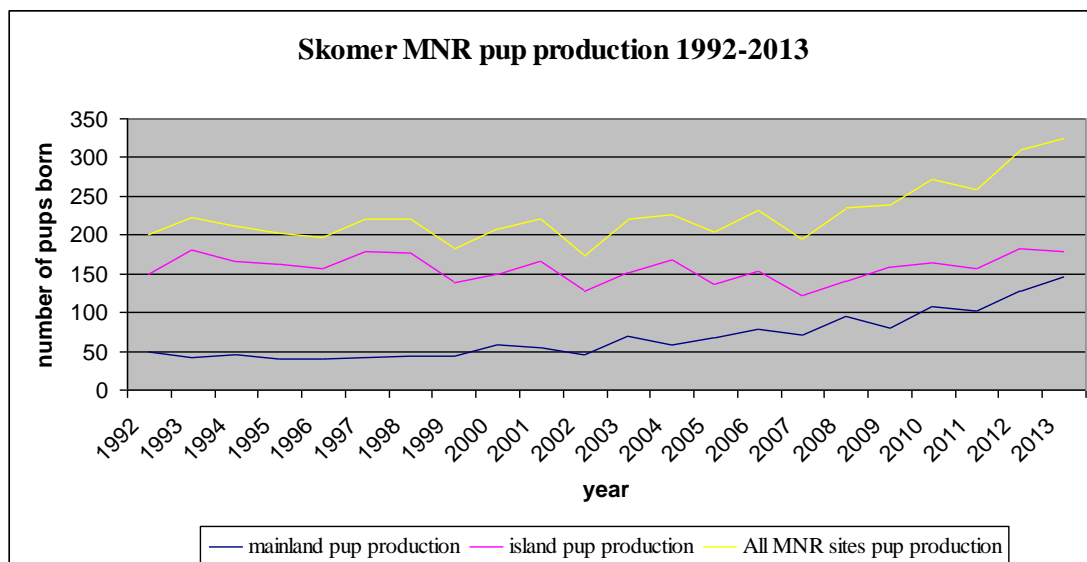
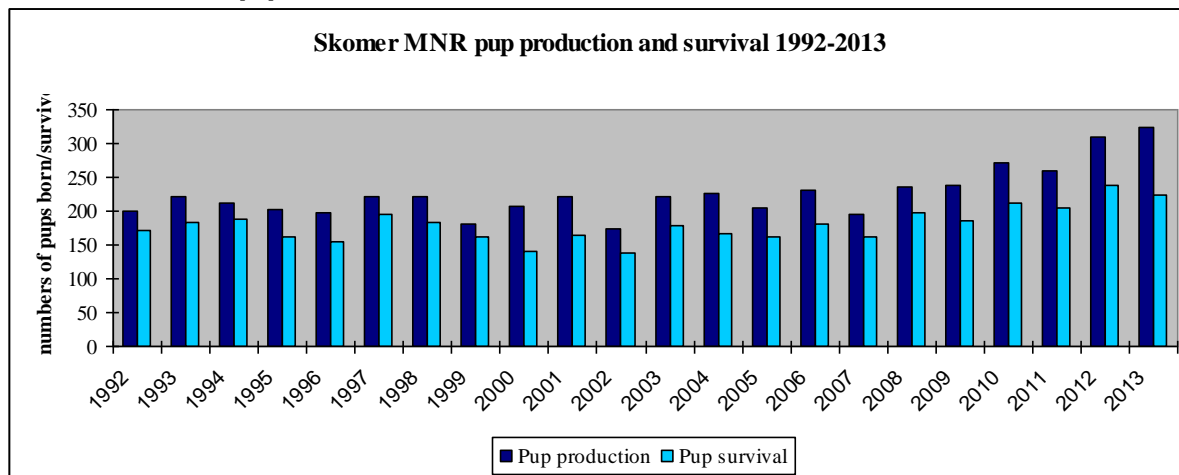
## SMNR Pot Fishing Distribution Summary 2013



## Appendix 2

### Skomer MNR Seal Work

#### Skomer MNR Pup production for ALL sites:





## Appendix 3

### Skomer MNR Science Report Synopses and Papers

#### **Grey Seal Breeding Census: Skomer Island, 2013**

##### **B. Buche & E. Stubbings, Wildlife Trust of South and West Wales 2013**

179 pups were born on Skomer in 2013 which is slightly less than in 2012 but still, together with 2007, the third highest total ever recorded. See section 4.2

324 pups were born in the Marine Nature Reserve as a whole in 2013: 179 on Skomer and 145 on the mainland. See section 4.2

The busiest week this year was week 42 (14-20/10) when 28 pups were born. This is one week earlier than 2012. See section 4.2

The most productive beaches were Matthew's Wick (35 pups), South Haven (34 pups) and Driftwood Bay (21 pups). North Haven beach was not popular this year. Only 18 pups were born on this beach in contrast to 26 in 2012. See section 4.2

121 pups are known, or assumed to have survived on Skomer, giving a survival rate of 68%, which is the third lowest survival rate since recording began. See section 4.3

The mean age at onset of moult was 14 days, the mean age at completion of moult was 22 days and the mean duration of moult was seven days. See section 4.6

In 2013 the maximum haul-out of 306 was recorded on 29 October. The number of seals using the haul-outs was slightly lower than the average for the last ten years. See section 5.

Twelve seals were recorded that had become entangled in netting or similar. See section 6

Photo-monitoring continued in 2013 although we were rather restricted by the lack of good camera equipment. We managed to take photos of nearly all pupping cows but due to the bad quality of the pictures we had to discard a large proportion of the material. In 2013 89 seals were identified on Skomer; 41 of them were re-identified **from previous photos**.

## Testing the suitability of a morphological monitoring approach for identifying temporal variability in a temperate sponge assemblage

Jade Berman<sup>a</sup>, Mark Burton<sup>b</sup>, Robert Gibbs<sup>b</sup>, Kate Lock<sup>b</sup>, Philip Newman<sup>b</sup>, Jen Jones<sup>b</sup>, James Bell

<sup>a</sup>, School of Biological Sciences, Victoria University of Wellington, PO Box 600, Wellington, New Zealand

<sup>b</sup> Skomer Marine Nature Reserve, Countryside Council for Wales, Fishermans Cottage, Martins Haven, Haverfordwest, Pembrokeshire SA62 3BJ, UK

### Abstract

Sponges are a dominant component of benthic assemblages in hard substratum environments across the world, but despite the importance of sponges, they are generally poorly represented in most marine monitoring programmes. There is considerable need to develop effective monitoring tools to monitor changes in sponge assemblages. Morphological monitoring has been proposed as a suitable method to monitor sponges and while morphological monitoring has already taken place at Skomer Marine Reserve (MNR), Wales, here we investigate whether species level and morphological level data sets are correlated with respect to temporal variation. Furthermore, we examine the environmental factors that correlate with the patterns of temporal variability. Both species and morphological data sets revealed significant seasonal changes and spatial variation in sponge assemblages; these data sets were highly correlated and explained by a number of environmental factors. We conclude that morphological monitoring of sponge assemblages may represent a cost-effective method for assessing temporal and spatial variation in sponges, where full species level monitoring is not possible, as patterns identified from morphological data were a suitable surrogate of species-level data.

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# Temporal and spatial variability of zoobenthos recruitment in a N-E Atlantic marine reserve.

Marta Ronowicz<sup>1</sup>, Piotr Kukliński<sup>1,2</sup>, Kate Lock<sup>3</sup>, Philip B. Newman<sup>3</sup>, Mark Burton<sup>3</sup>, Jennifer Jones<sup>3</sup>

<sup>1</sup> Institute of Oceanology, Polish Academy of Sciences, Marine Ecology Department, ul. Powstańców Warszawy 55, Sopot 81-712, Poland

<sup>2</sup> Natural History Museum, Cromwell Road, London SW7 5BD, UK

<sup>3</sup> Skomer Marine Nature Reserve, Countryside Council for Wales, Fishermans Cottage, Martins Haven, Haverfordwest, Pembrokeshire SA62 3BJ, UK

*Submerged artificial surface imitates newly available habitat for settlement of marine fauna. It also enables study of the timing of benthic larval settlement. Such knowledge is important if the model of possible recovery after disturbance in protected areas is to be assessed. During this study recruitment of sessile benthic invertebrate fauna at spatial and temporal scales was investigated using artificial panels submersed in the Skomer Marine Nature Reserve (Wales, UK). Panels were exchanged monthly between May 2009 and September 2011 (with the exclusion of winter time). Recruitment was highly variable with regard to time and distribution: Abundance and number of recruiting species varied significantly between sites (about 2 km apart from each other), depths (6 and 12 m), position of panels (top or underside), and years without any obvious trends. The highest number of individuals and highest values of species richness were at Bernies Rocks, at the greater depth and on the underside surface of panels. Bryozoans were the dominant taxon on panels in each studied year and month. Most species exhibit a colonial life strategy with short-lived, non-feeding larval stage. Although many species settle all year round, levels of settlement usually peak in summer months, showing a seasonal recruitment pattern (*Bugula fulva*, *Spirobranchus triqueter*, *Chorizopora brongniarti* and *Escharoides coccinea*). Some species had a pronounced settlement peak in spring (*Electra pilosa* and *Balanus crenatus*).*

# Cost-effective method for establishing an ecological baseline of the zooplankton at Skomer Marine Nature Reserve

Andrea McEvoy, Mark Burton, Paul Somerfield and Angus Atkinson



*Eunicella verrucosa* – pink sea fan. Nationally rare and delicate species monitored at Skomer

Skomer is a small island located approximately one mile off the south west of Pembrokeshire in Wales. The area was designated a Marine Nature Reserve (MNR) in 1990 and is managed by Natural Resources Wales.



The reserve is nationally important due to its rich marine life and diversity of habitats. Many species are at the edge of their geographical range with an overlap between warmer southern waters and the cooler nutrient rich waters of the northern Irish Sea.



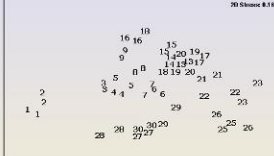
*Necora puber* – velvet swimming crab. *Corynactis viridis* – jewel anemone. High diversity exists in close proximity



Plankton samples have been collected at Skomer since 2010

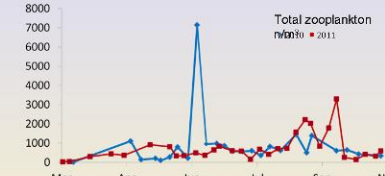


The Marine Strategy Framework Directive (MSFD) requires EU member states to assess their coastal waters and achieve "Good Environmental Status" (GES) by 2020. A cost effective monitoring programme needs to be established in order to fulfil this criteria. Plankton forms the basis of marine food webs so is an essential component within the marine ecosystem. Therefore a baseline must be determined in order to quantify the natural variability before impacts of any anthropogenic alterations can be considered.

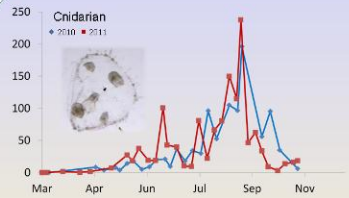


Multivariate analysis, two replicates for zooplankton abundance r/m<sup>3</sup> 2011

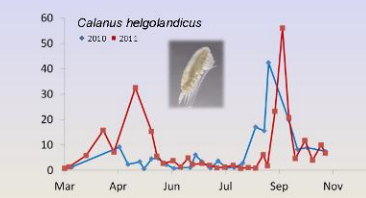
Multivariate analysis reveals that replicate net hauls were consistently similar. The analysis of one haul per time point would improve the cost effectiveness of monitoring this MNR.



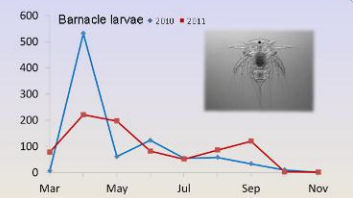
A high degree of variability in abundance throughout the two years means that long-term monitoring is necessary to gain a better understanding of natural and seasonal variability.



Cnidarians are gelatinous planktonic consumers of other zooplankton and can have a negative impact on fish recruitment through competition and predation. In high numbers they make bathing waters unusable so may have profound ecological and socio-economic consequences.

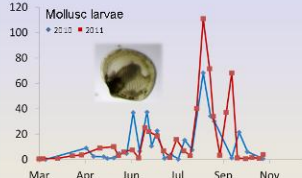


This energy-rich copepod is an important link between primary production and higher trophic levels. It is a major food source for commercially important fish. The distribution range and abundance of *C. helgolandicus* have increased as surface sea temperature has warmed making it a useful indicator of climate change.

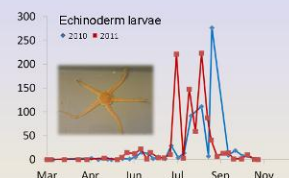


There was a notable spike in barnacle larvae in April 2010 which coincided with a large spatfall of *Semibalanus balanoides* on the shore. This species tends to be intolerant of warmer conditions. A temperature above 10°C can lead to reproductive failure.

*Zostera marina* – eelgrass. Provides a highly productive habitat, particularly for sandeels



Some species reach peak abundances for relatively short periods of time demonstrating strong seasonal signals. In order to resolve this variability weekly sampling is preferable to monthly.



*Fratercula arctica* – puffin. Large breeding colony, feeds on plankton-eating sandeels



## Appendix 5

### Abbreviations

AcoP	Approved Code of Practice
AWS	Automatic weather station
BAP	Biodiversity Action Plan
BS-AC	British Sub-Aqua Club
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CCW	Countryside Council for Wales
DTI	Department of Trade and Industry
DEFRA	Department of Environment, Fisheries and Rural affairs
EA	Environment Agency
NE	Natural England
EU	European Union
FPV	Fisheries Protection Vessel
FSC	Field Studies Council
FTA	Fixed Term Appointment
HSC	Health and Safety Commission
HW	Honorary Warden
JNCC	Joint Nature Conservation Committee
MEP	Member of the European Parliament
MHPA	Milford Haven Port Authority
MNR	Marine Nature Reserve
MCA	Marine Coastguard Agency
MCO	Marine Conservation Officer
MCS	Marine Conservation Society
MPA	Marine Protected Area
NCI	National Coastwatch Institution
NERC	Natural Environment Research Council
NNR	National Nature Reserve
NRW	Natural Resources Wales
NT	National Trust
NTZ	No Take Zone
OMS	Oceanographic monitoring site
PCC	Pembrokeshire County Council
PCF	Pembrokeshire Coastal Forum
PCNP	Pembrokeshire Coast National Park
PMSAC	Pembrokeshire Marine Special Area of Conservation
PMCG	Pembrokeshire Marine Code Group
POCG	Pembrokeshire Outdoor Charter Group
RIB	Rigid-hulled inflatable boat
RSPB	Royal Society for the Protection of Birds
RSPCA	Royal Society for the Prevention of Cruelty to Animals
RYA	Royal Yachting Association
SDSC	Scientific Diving Supervisory Committee
SNH	Scottish Natural Heritage
UW	University of Wales
WG	Welsh Government
WTSWW	Wildlife Trust South and West Wales

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